MICROPROSE GAMES

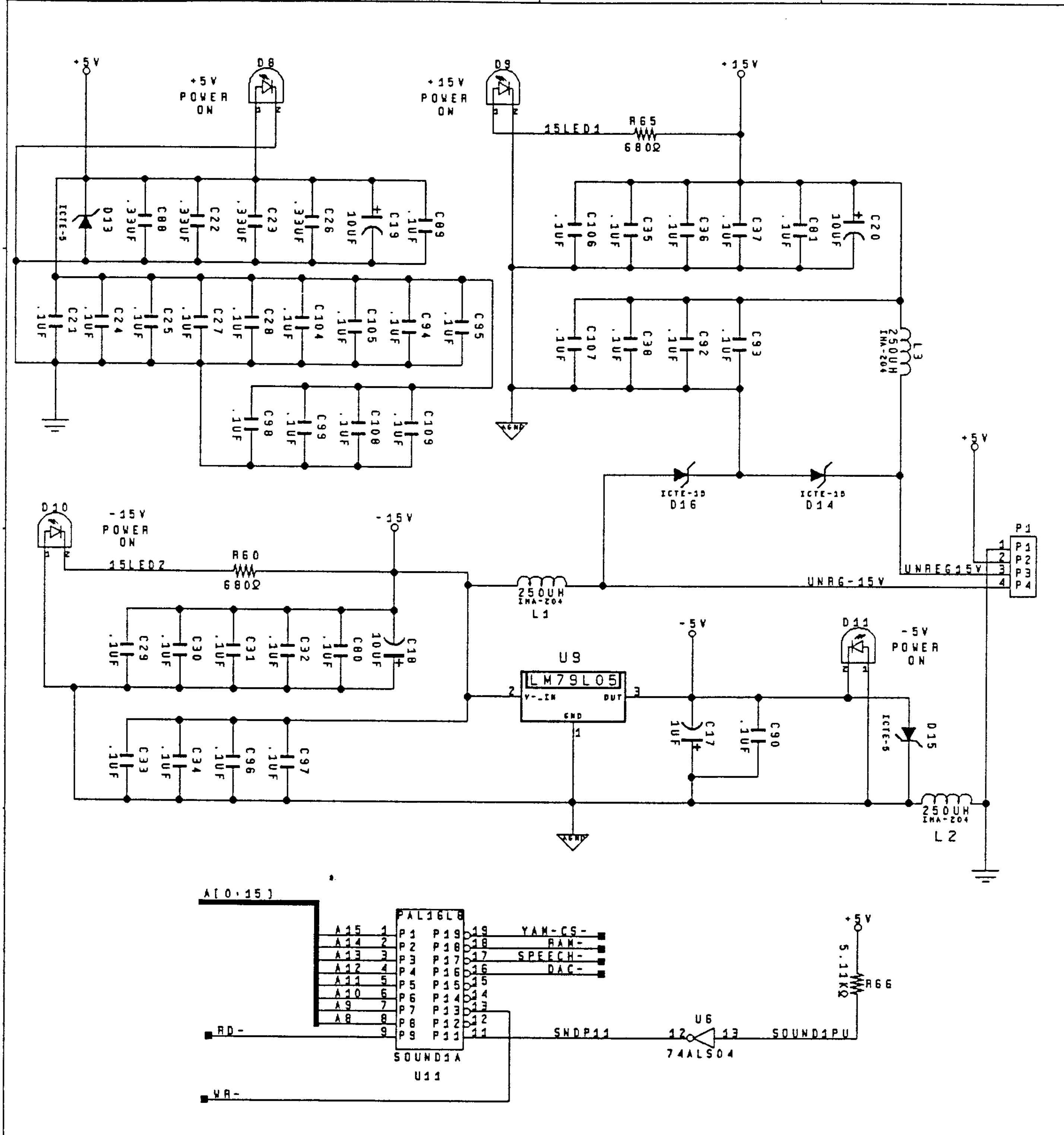
SOUND PRINTED CIRCUIT BOARD ASSEMBLY

DATE	ECN(s)	REV	SHEET NUMBER																																		
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5-30-90	ECN	A	A	A	A	A	A	A	A	A	A																										

COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

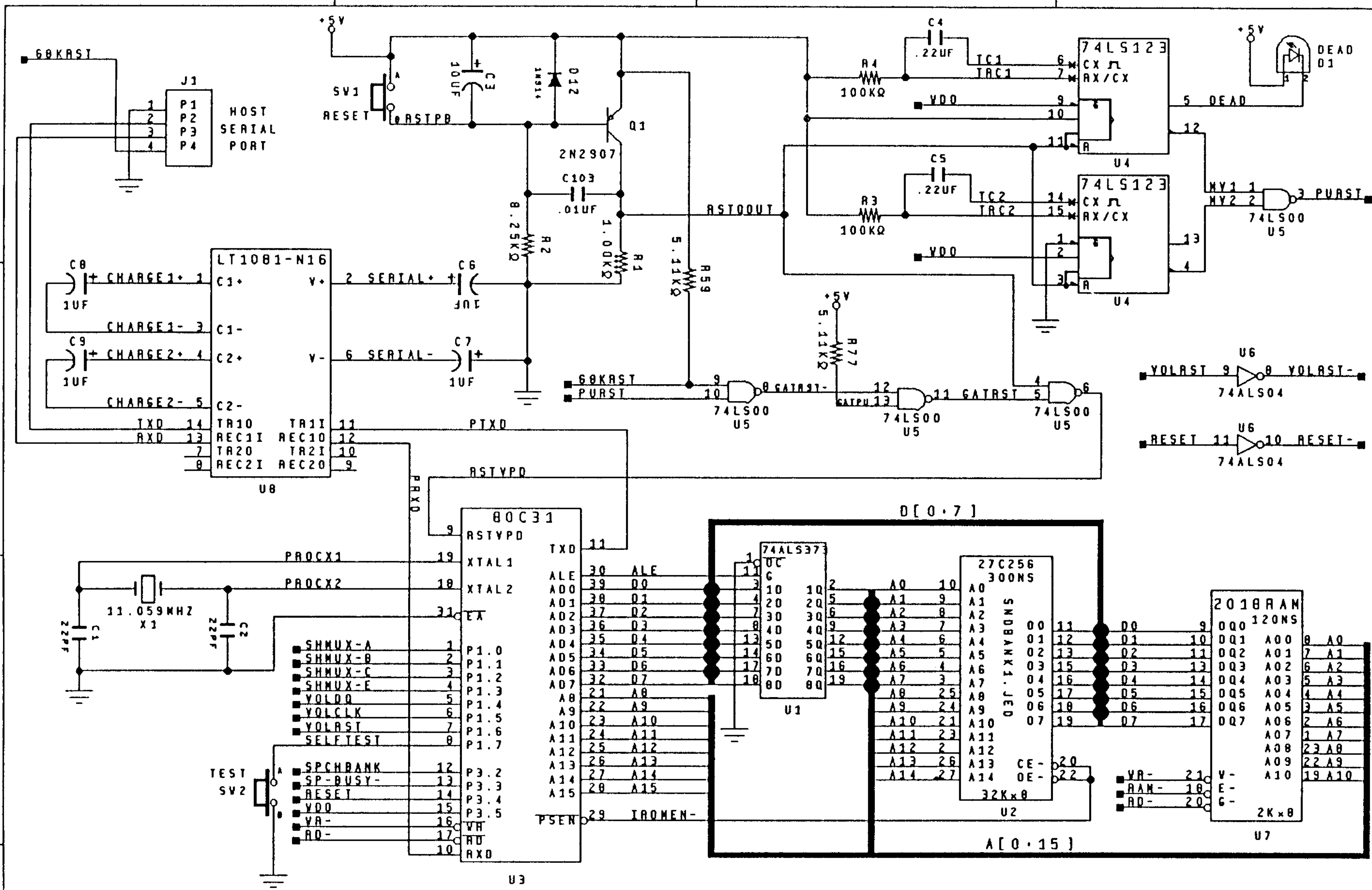
DRAFTER: DAVID J.BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER	DATE	TITLE SOUND PRINT CIRCUIT BOARD ASSEMBLY
ENGINEER: ALLEN BLACK (signature)	DATE: 5/31/90	
APPROVAL	DATE	SIZE: C — DRAWING NUMBER: DW-00011C-0018-01
APPROVAL (signature)	DATE: 6/7/90	REV: A — RELEASE
		DATE 5-30-1990_10:21 — SHEET 1 OF 9



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

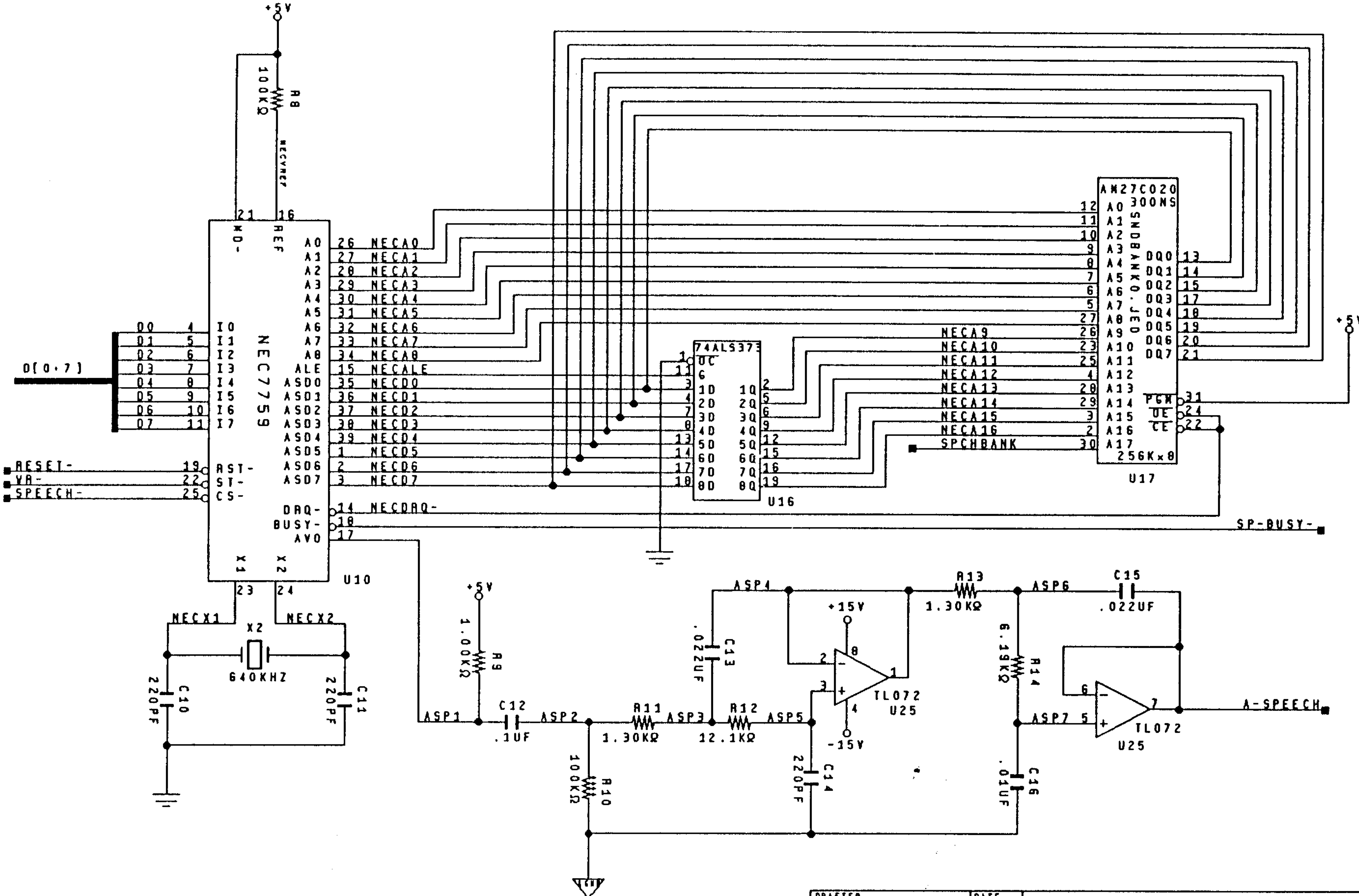
DRAFTER DAVID J.BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER	DATE	TITLE SOUND POWER CONNECTION/DECOUPLING
ENGINEER JIM McCONKEY	DATE 5/30/92	
APPROVAL	DATE	SIZE C — DRAWING NUMBER DW-00011C-0018-01
APPROVAL	DATE	REV A — RELEASE
		DATE 5-24-1990_12:13 — SHEET 2 OF 9



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

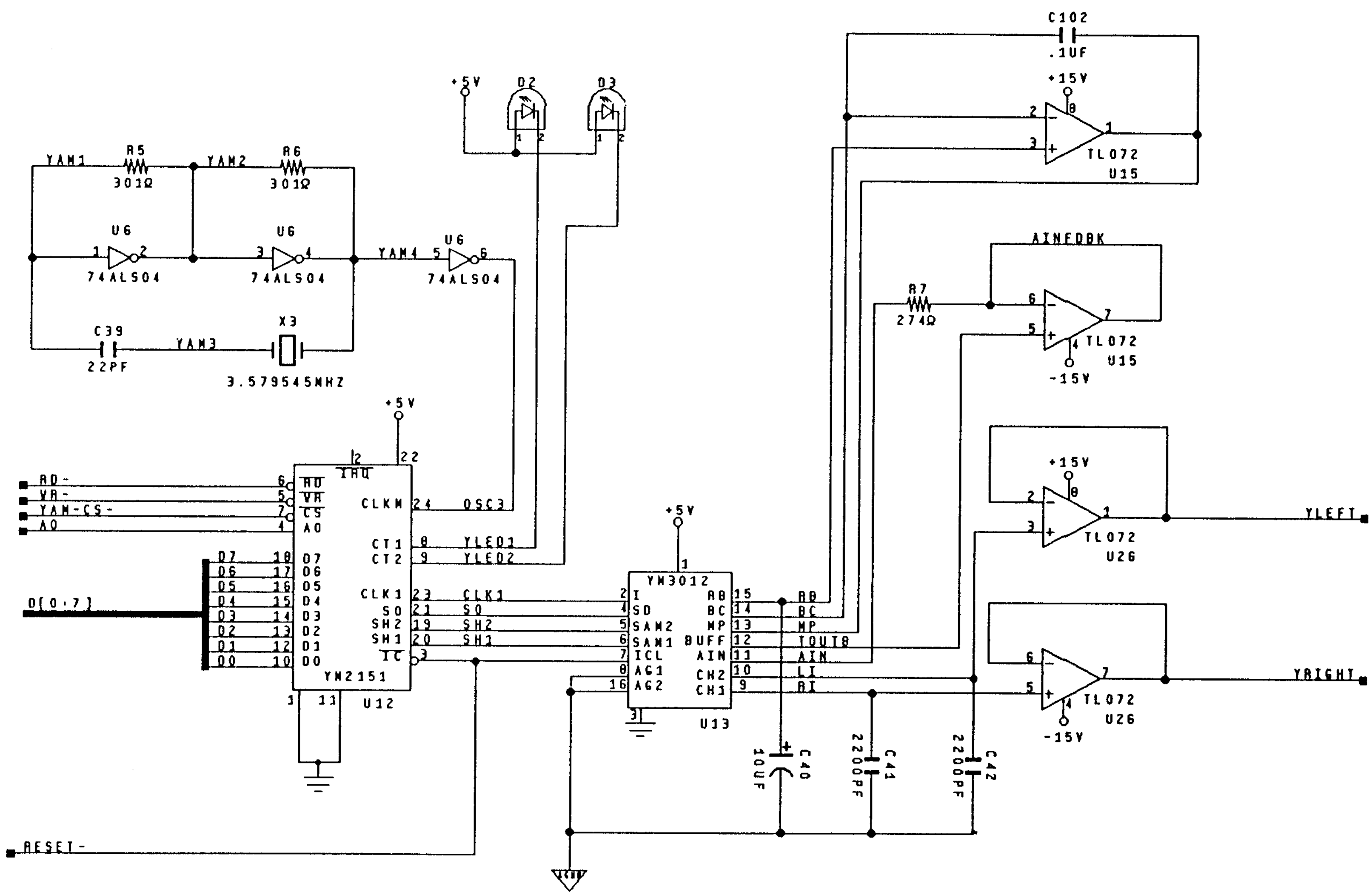
DRAFTER: DAVID J.BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER	DATE	TITLE SOUND CPU, INSTRUCTION MEMORY, RESET AND RS232 COMMUNICATIONS
ENGINEER: GARY GREEN	DATE: 5/30/90	
APPROVAL	DATE	SIZE C — DRAWING NUMBER DW-00011C-0018-01 — REV A — RELEASE
APPROVAL	DATE 6/7/90	DATE 5-30-1990_9:15 — SHEET 3 OF 9



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

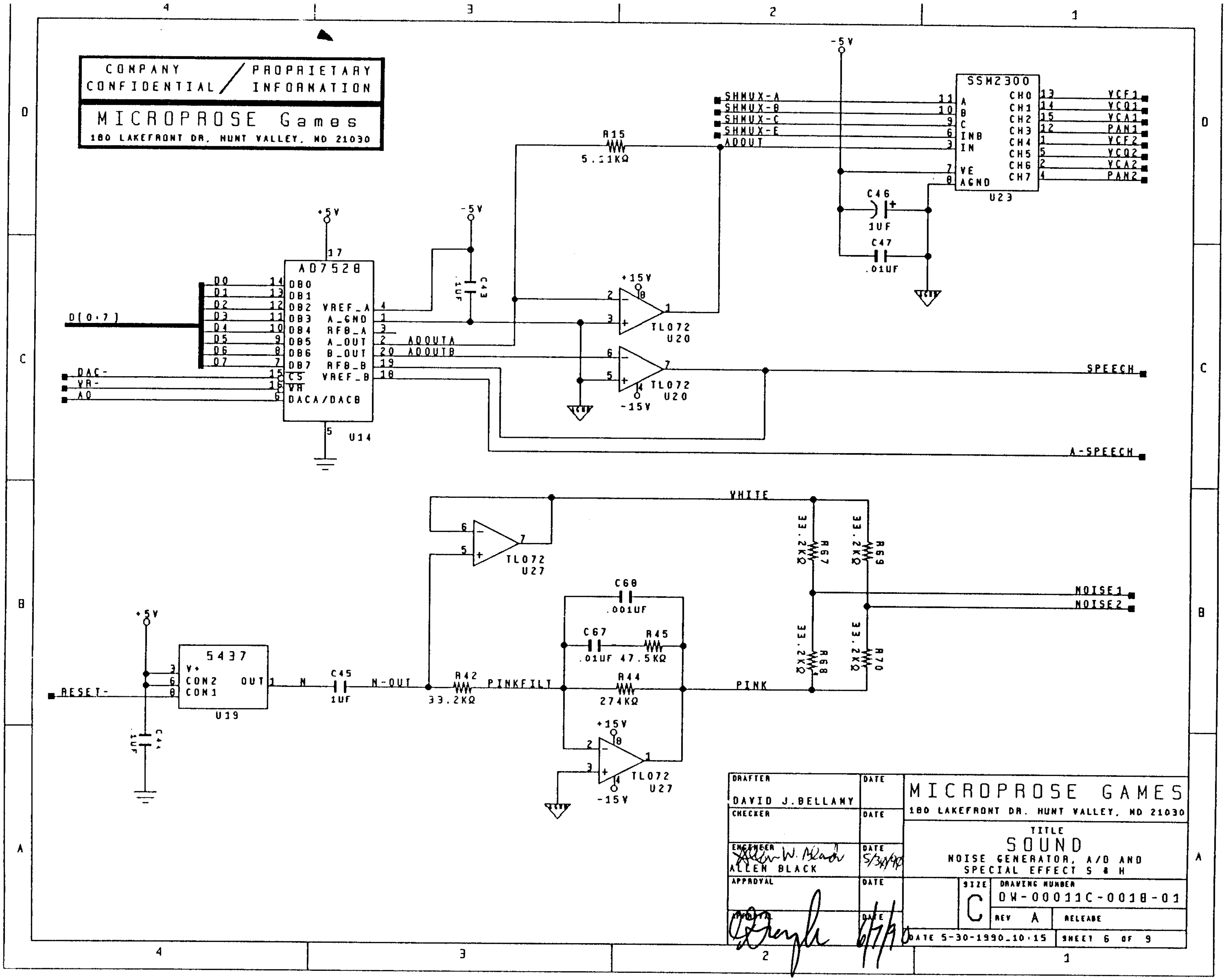
DRAFTER: DAVID J.BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER	DATE	TITLE SOUND SPEECH GENERATOR
ENGINEER: JIM McCONKEY (signed)	DATE: 5/30/90	
APPROVAL	DATE	SIZE C — DRAWING NUMBER DW-00011C-0018-01
APPROVAL (signed)	DATE: 6/7/90	REV A — RELEASE
		DATE 5-24-1990_12:9 — SHEET 4 OF 9

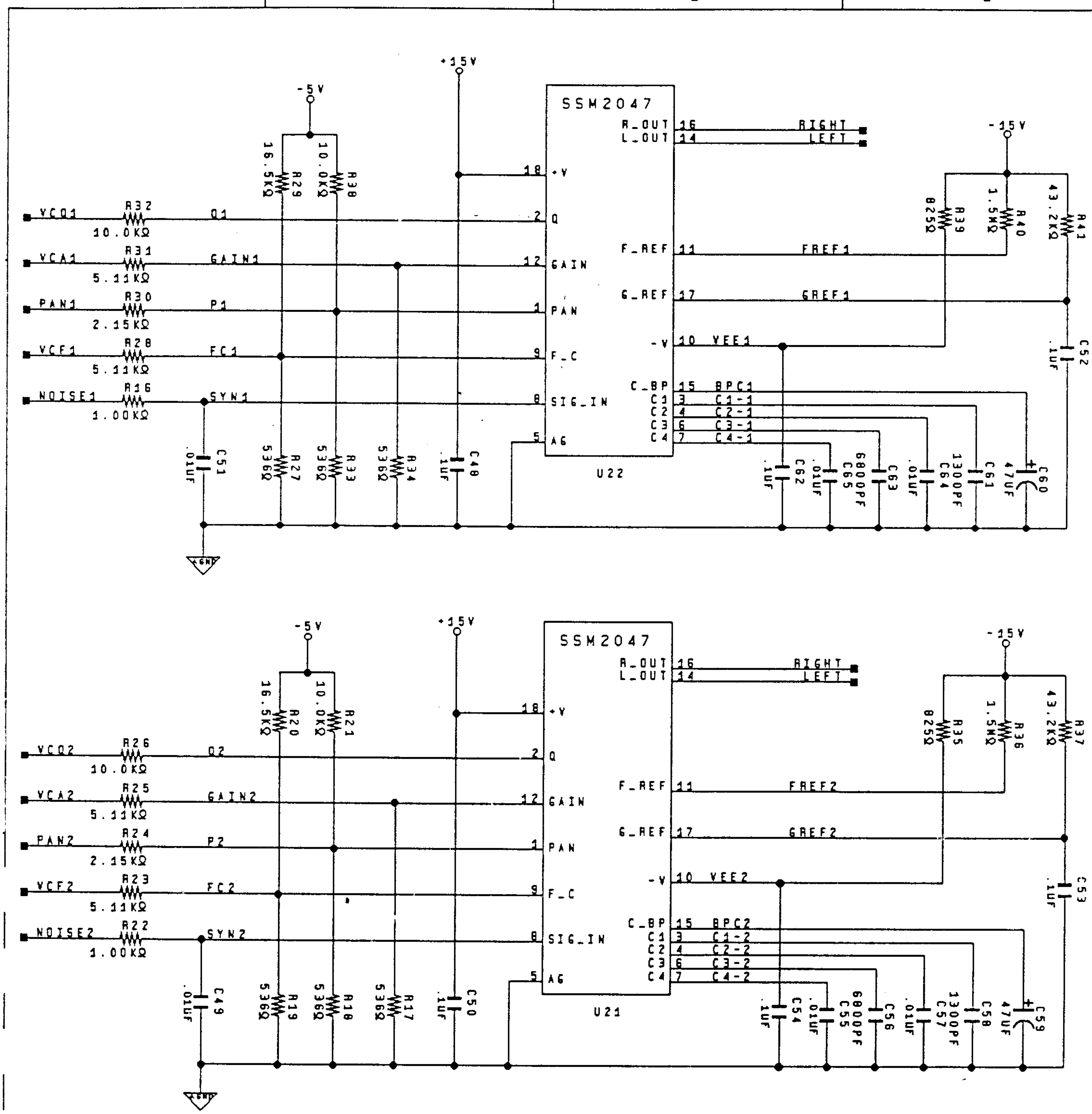


COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER: DAVID J.BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER	DATE	TITLE SOUND STEREO MUSIC SYNTHESIZER
ENGINEER: Allen W. Black ALLEN BLACK	DATE: 5/30/90	
APPROVAL	DATE	SIZE: C — DRAWING NUMBER: DW-00011C-0018-01
APPROVAL	DATE: 6/7/90	REV A — RELEASE
		DATE 5-30-1990 9:51 — SHEET 5 OF 9

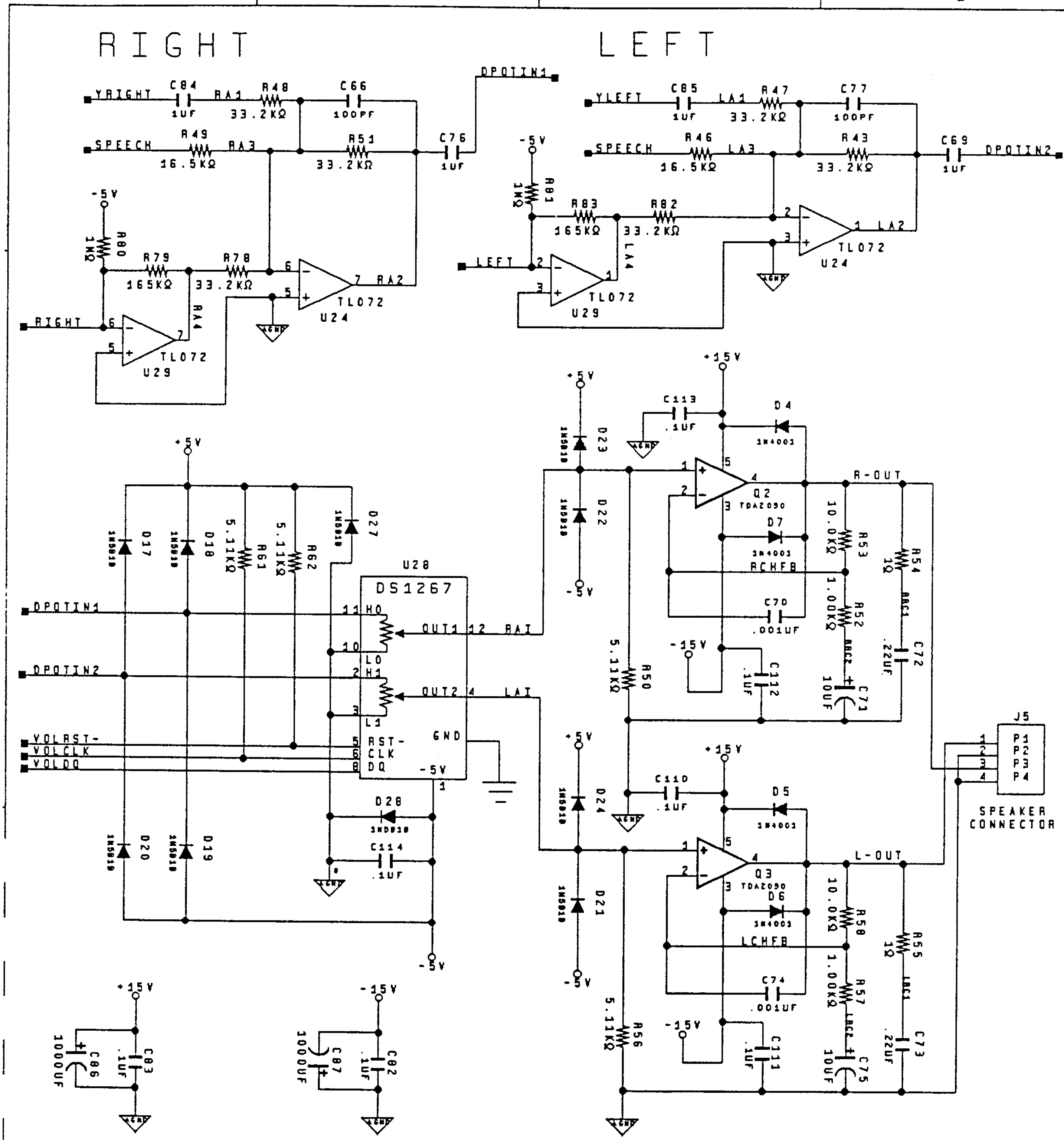

COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION
MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030
AD7528
U14
D[0:7]
DAC-
WR-
A0
ADOUTA
ADOUTB
TL072
U20
R15 5.11KΩ
C43 .1UF
-5V
+5V
+15V
-15V
SHMUX-A
SHMUX-B
SHMUX-C
SHMUX-E
ADOUT
SSM2300
U23
C46 1UF
C47 .01UF
VCF1
VCQ1
VCA1
PAN1
VCF2
VCQ2
VCA2
PAN2
SPEECH
A-SPEECH
WHITE
TL072
U27
R67 33.2KΩ
R68 33.2KΩ
R69 33.2KΩ
R70 33.2KΩ
NOISE1
NOISE2
C68 .001UF
C67 .01UF
R45 47.5KΩ
R42 33.2KΩ
R44 274KΩ
PINKFILT
PINK
5437
U19
RESET-
C45 1UF
C44 1UF
N
N-OUT
DRAFTER DAVID J.BELLAMY
CHECKER
ENGINEER ALLEN BLACK
DATE 5/30/90
APPROVAL
MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030
TITLE SOUND
NOISE GENERATOR, A/D AND SPECIAL EFFECT S & H
SIZE C
DRAWING NUMBER DW-00011C-0018-01
REV A
RELEASE
DATE 5-30-1990_10:15
SHEET 6 OF 9



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER	DATE	TITLE: SOUND MUSIC VOICING SYSTEMS
ENGINEER: ALLEN BLACK	DATE: 5/31/90	SIZE: C · DRAWING NUMBER: DW-00011C-0018-01
APPROVAL	DATE	REV: A · RELEASE
APPROVAL	DATE: 6/7/90	DATE 5-30-1990_14:46 · SHEET 7 OF 9

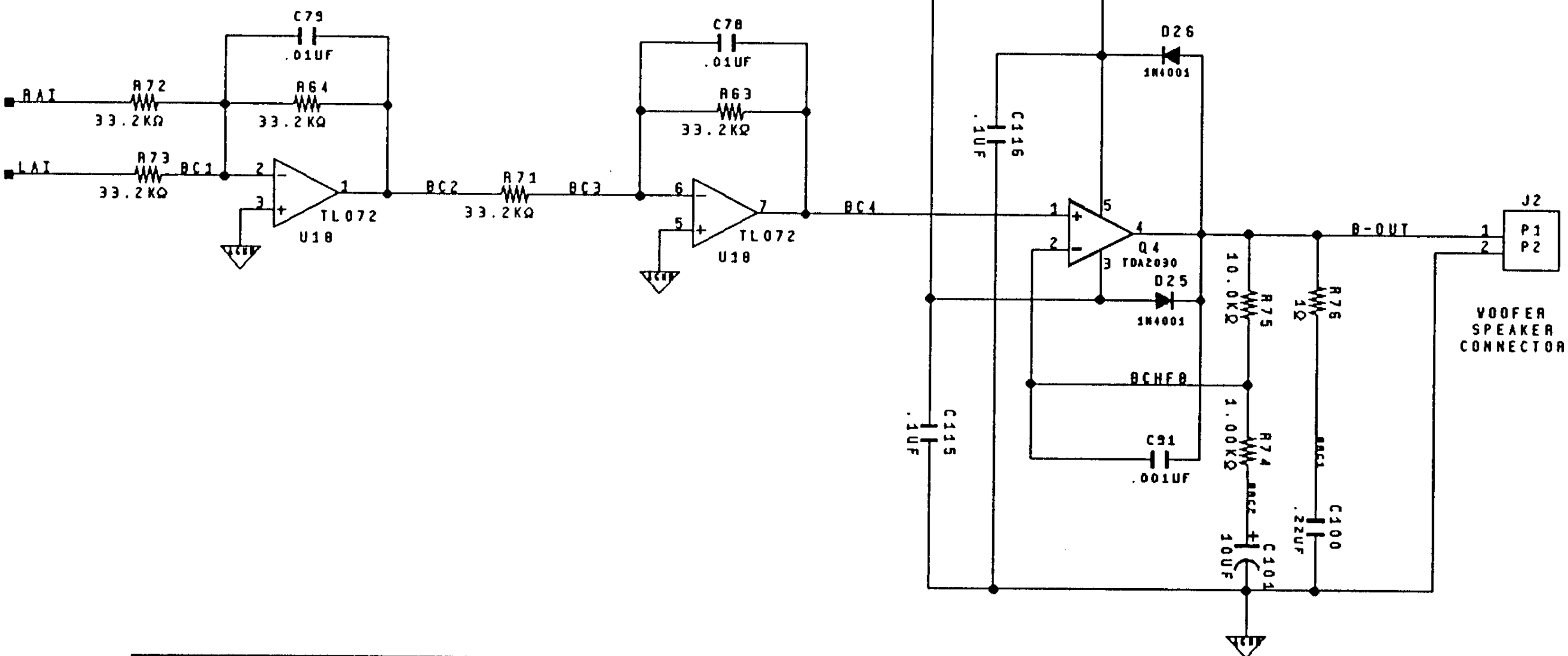


COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER	DATE	TITLE SOUND LEFT AND RIGHT CHANNEL OUTPUT AUDIO AMPLIFIERS
ENGINEER: ALLEN BLACK (signed)	DATE: 5/30/90	
APPROVAL	DATE	SIZE: C — DRAWING NUMBER: DW-00011C-0018-01
APPROVAL (signed)	DATE: 6/7/90	REV: A — RELEASE
		DATE 5-30-1990_14:50 — SHEET 8 OF 9

BASS



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER: DAVID J.BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER	DATE	TITLE SOUND BASS OUTPUT AUDIO AMPLIFIER
ENGINEER: ALLEN BLACK	DATE: 5/31/90	SIZE: C — DRAWING NUMBER: DW-00011C-0018-01
APPROVAL	DATE	REV A — RELEASE
APPROVAL	DATE: 6/7/90	DATE 5-30-1990_14:52 — SHEET 9 OF 9

MICROPROSE GAMES, 180 Lakefront Drive, Hunt Valley, Maryland 21030
PROJECT: SOUND BOARD DRWG NO: PL-00011A-00018-01 REV: C
DATE: Wed 1-Aug-1990

ITEM	QTY	VENDOR PART NUMBER REF. DES.	PART DESC	VALUE	MPG P/N
1	2	CCF-07 155J R40,R36	5PCMFRES	1.5MOHM	503-00005-155
2	1	CCF-50 2743F R44	1PCMFRES	274KOHM	503-00001-274
3	4	CCF-50 1003F R3,R4,R8,R10	1PCMFRES	100KOHM	503-00001-104
4	1	CCF-50 4752F R45	1PCMFRES	47.5KOHM	503-00001-473
5	2	CCF-50 4322F R37,R41	1PCMFRES	43.2KOHM	503-00001-433
6	9	CCF-50 3322F [R73,R72,R71,R64,R63],R51,R48,R47,R43,R42,R78,R82,R68,R70	1PCMFRES	33.2KOHM	503-00001-333
7	4	CCF-50 1652F R20,R29,R46,R49	1PCMFRES	16.5KOHM	503-00001-163
8	1	CCF-50 1212F R12	1PCMFRES	12.1KOHM	503-00001-123
9	6	CCF-50 1002F R21,R26,R32,R38,R58,R53,[R75]	1PCMFRES	10.0KOHM	503-00001-103
10	1	CCF-50 8251F R2	1PCMFRES	8.25KOHM	503-00001-822
11	1	CCF-50 6191F R14	1PCMFRES	6.19KOHM	503-00001-612
12	12	CCF-50 5111F R62,R61,R56,R50,R23,R25,R31,R28,R15,R59,R66,R77	1PCMFRES	5.11KOHM	503-00001-512
13	2	CCF-50 2151F R24,R30	1PCMFRES	2.15KOHM	503-00001-212
14	2	CCF-50 1301F R13,R11	1PCMFRES	1.30KOHM	503-00001-132
15	6	CCF-50 1001F R1,R9,R16,R22,R52,R57,[R74]	1PCMFRES	1.00KOHM	503-00001-102
16	2	CCF-07 681G R60,R65	2PCMFRES	680 OHM	503-00002-681
17	6	CCF-50 5360F R34,R19,R18,R17,R33,R27	1PCMFRES	536 OHM	503-00001-541

ITEM	QTY	VENDOR PART NUMBER REF. DES.	PART DESC	VALUE	MPG P/N
18	2	CCF-50 3010F R6,R5	1PCMFRES	301 OHM	503-00001-301
19	1	CCF-50 2740F R7	1PCMFRES	274 OHM	503-00001-001
20	2	5053EM1R00J R55,R54,[R76]	5PCMFRES	1 OHM	503-00005-010
21					
22	2	513D108M016DK4 C87,C86	RADTANTCAP	1000UF	410-00002-108
23	2	TAP476M020CRW C59,C60	RADTANT	47UF	421-00020-476
24	7	173D106X0035X C3,C40,C71,C75,C18,C19,C20,[C101]	AXTANT	10UF	422-00072-106
25	6	173D105X0035V C46,C17,C7,C6,C9,C8	AXTANTCAP	1UF	422-00072-105
26	5	C340C105K5R5CA C85,C76,C69,C84,C45	RADCERCAP	1UF	400-00281-105
27	4	C412C334M5U5CA C23,C22,C26,C88	AXCERCAP	.33UF	402-00382-334
28	36	C410C104M5U5CA C44,C43,C99,C98,C97,C96,C95,C94,C93,C92,C38,C37,C36,C35,C113 C34,C33,C32,C31,C30,C28,C27,C25,C24,C21,C29,C80,C81,C89,C90, C104,C105,C106,C107,C108,C109,[C114,C115,C116,C110,C111,C112]	AXCERCAP	.1UF	402-00382-104
29	4	C430C224J5R5CA C4,C5,C72,C73,[C100]	AXCERCAP	.22UF	402-00285-224
30	10	C412C104J5R5CA C83,C82,C48,C50,C53,C54,C52,C62,C12,C102	AXCERCAP	.1UF	402-00285-104
31	2	C410C223J5R5CA C15,C13	AXCERCAP	.022UF	402-00285-223
32	10	C410C103J5R5CA C51,C49,C55,C57,C64,C65,C67,C47,C16,C103,[C78,C79]	AXCERCAP	.01UF	402-00285-103
33	3	C410C102J1R5CA C68,C70,C74,[C91]	AXCERCAP	.001UF	402-00295-102
34	2	C410C222J1R5CA C42,C41	AXCERCAP	2200PF	402-00295-222
35	3	C410C221J1G5CA C10,C14,C11	AXCERCAP	220PF	402-00195-221

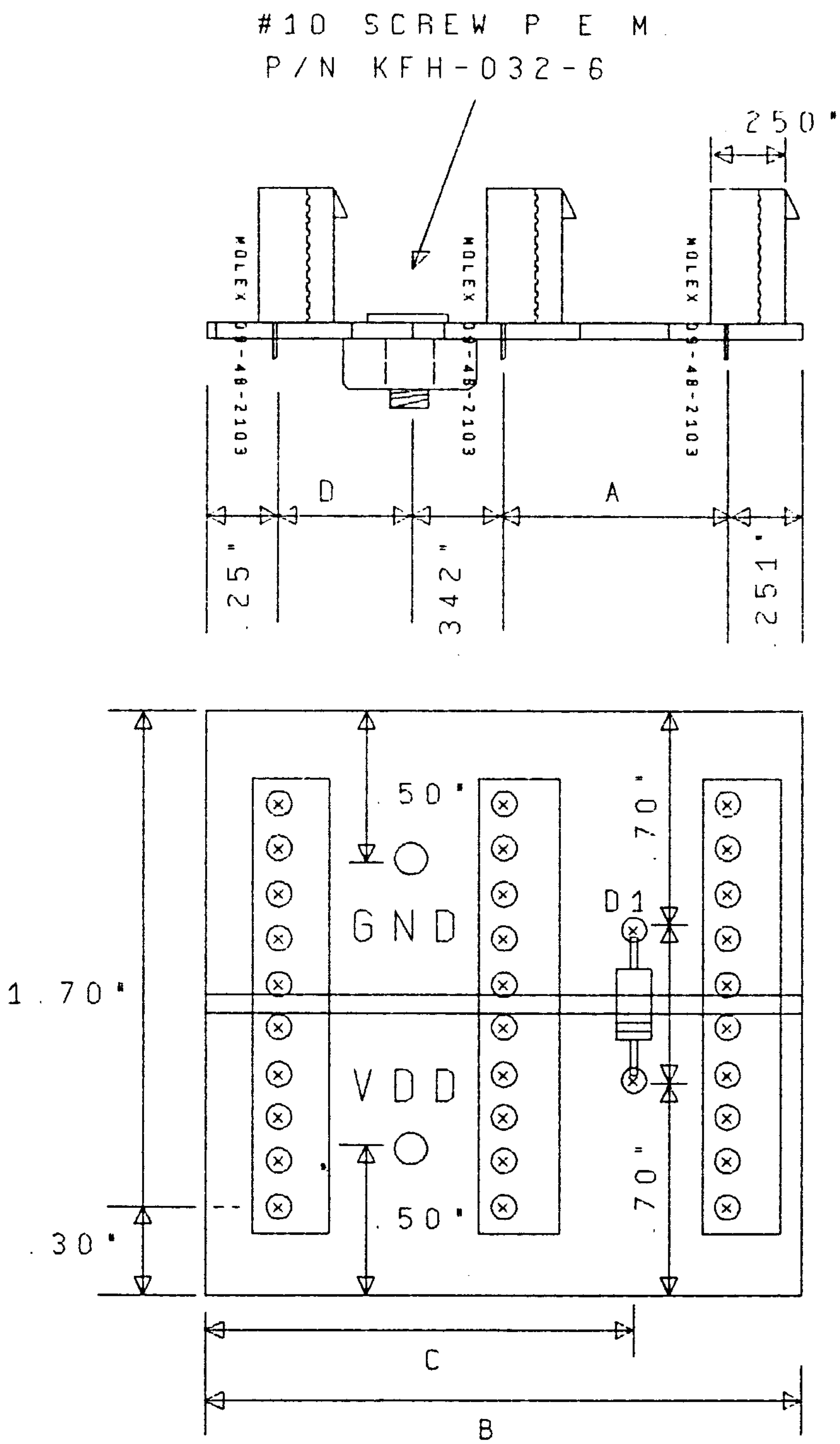
ITEM	QTY	VENDOR PART NUMBER REF. DES.	PART DESC	VALUE	MPG P/N
36	2	C410C101J1G5CA C66,C77	AXCERCAP	100PF	402-00195-101
37	3	C410C220J1G5CA C39,C2,C1	AXCERCAP	22PF	402-00195-220
38	2	SX268J C63,C56	POLYFILMCAP	6800PF	430-00002-682
39	2	SXM213H C61,C58	POLYFILMCAP	1300PF	430-00001-132
40	2	ICTE-15 D14,D16	ZENER	15V	300-00001-005
41	2	ICTE-5 D13,D15	ZENER	5V	300-00001-002
42	10	1N5818 D17,D18,D19,D20,D21,D22,D23,D24,D27,D28	SCHOTDIODE		302-00002-001
43	4	1N4001 D7,D6,D5,D4,[D25,D26]	DIODE,RECT		302-00001-001
44	1	1N914 D12	DIODE,SIGNAL		300-00002-003
45	7	HLMP3600 D8,D3,D2,D1,D9,D10,D11	LED	RED	305-00003-002
46	3	IHA-204 L1,L2,L3	INDUCTOR	250 UH	590-00001-001
47	1	NYP 111-20 X1	OSCILLATOR	11.06MHZ	290-00003-011
48	1	NYP035A-18 X3	SNDXTAL	3.58MHZ	290-00003-003
49	1	CSB640J X2	CERRESONATR	640KHZ	290-00005-640
50	1	15-24-4049 P1	4PINPWRCON	.200"	610-00300-004
51	2	22-23-2041 J1,J5	4PINMOLEX	.100"	610-00102-004
52	[0]	22-23-2021 [J2]	2PINMOLEX	.100"	610-00102-002
53	2	KSA1A211 SW2,SW1	PBSWITCH		625-00002-001

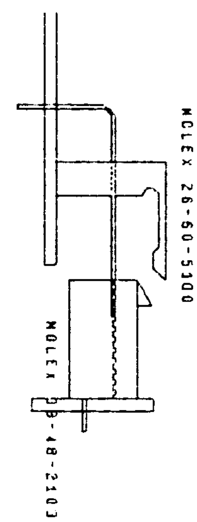
ITEM	QTY	VENDOR PART NUMBER REF. DES.	PART DESC	VALUE	MPG P/N
54	1	2-644018-2 UX17	32PINSOCKET	.600"	600-00003-632
55	1	ICO-628MTT UX2	28PINSOCKET	.600"	600-00001-628
56	[0]	ICO-320MTT [UX11]	20PINSOCKET	.300"	600-00001-320
57	[0]	2-641606-1 [UX3]	40PINSOCKET	.600"	600-00003-640
58	2	7-0805G-5 TP1,TP2	TEST PIN		710-00001-001
59	2	7023BCLP	HEATSINK		790-00001-001
60	2	CLP201	CLIP,HEATSINK		790-00001-002
61	1	DS1267-50 U28	DUALDIGPOTS	50KOHM	282-01267-200
62	1	P80C31BH U3	MICROPROCESR	12MHZ	135-80C31-212
63	1	UPD7759CADPC U10	SPEECHGEN		282-07759-200
64	1	MM5437 U19	NOISEGENR		282-05437-200
65	1	YM2151 U12	MUSICSYNTH		282-02151-200
66	1	YM3012 U13	STEREODAC		282-03012-200
67	2	TDA2030V Q3,Q2,[Q4]	AUDIOAMP		282-02030-600
68	7	TL072ACP U24,U27,U20,U26,U15,U25,U29,[U18]	DUALOPAMP		282-00072-200
69	1	MC79L05ACZ U9	NEG5VREG		281-07905-001
70	1	TP2907 Q1	PNPTRANS		310-00001-001
71	1	PAL16L8-BCN U11	SOUND1A	15NS	120-00003-001
72	1	AM27C020-305DC U17	256Kx8EPROM SNDBANK0.JED	300NS	110-00003-001

ITEM	QTY	VENDOR PART NUMBER REF. DES.	PART DESC	VALUE	MPG P/N
73	1	MCM2018AN45 U7	2Kx8SRAM	45NS	221-00004-245
74	1	D27C256-3 U2	32Kx8EPROM SNDBANK1.JED	300NS	110-00004-001
75	2	SSM-2047P U22,U21	MUSICVOICE		282-02047-200
76	1	SSM-2300P U23	8CHANS/HOLD		282-02300-200
77	1	AD7528JN U14	D/A CONVRTR		245-00003-200
78	1	LT1081CN U8	RS232DRVR		235-00001-200
79	1	SN74ALS04BN U6	HEXINVERTRS		200-00004-200
80	1	SN74LS00N U5	QUAD2-IN'NAND'		202-00000-200
81	1	SN74LS123N U4	DUALONESHOT		202-00123-200
82	2	SN74ALS373N U16,U1	OCTDFLOPS		200-00373-200
83	2	CCF-07 105G R80,R81	2PCMFRES	1MOHM	503-00002-105
84	2	CCF-50 8250F R39,R35	1PCMFRES	825OHM	503-00001-831
85	2	CCF-50 1653F R79,R83	1PCMFRES	165KOHM	503-00001-174

	254				

NOTES:
1. ITEMS WITH REFERENCE DESIGNATORS IN BRACKETS [] WILL NOT BE POPULATED FOR PRODUCTION.





DIM.	REV-	REV A
A	.812"	.750"
B	2.125"	2.000"
C	1.45"	1.388"
D	.47"	.408"

DRILL KEY:

⊗ .0625"

○ .1875"

DRAFTER: JG MCKIBBIN	DATE	MICROPROSE GAMES 180 LAKEFRONT DRIVE HUNT VALLEY, MD 21030
CHECKER	DATE	TITLE
ENGINEER: JG MCKIBBIN	DATE	PWR BACKPLANE
APPROVAL	DATE	SIZE: C — DRAWING NUMBER: DW-00013A-0008-01
APPROVAL: PWR.5	DATE	DATE — SHEET OF

MICROPROSE GAMES, 180 Lakefront Drive, Hunt Valley, Maryland 21030

PROJECT: POWER BACKPLANE **DRWG NO:** PL-00011A-0008-01 **REV:**

DATE: Tue 15-Jan-1991

ITEM	QTY	VENDOR PART NUMBER / REF. DES.	PART DESC	VALUE	MPG P/N
1	3	09-48-2103 J1,J2,J3	1x10FEMCON	.156"	610-10301-010
2	2	KFH-032-6 ST1,ST2	PEM STUDS	#10-32	721-00520-410
3	2	N1,N2	HEXNUTS	#10-32	721-00010-010
4	2	W1,W2	LOCKWASHERS	#10	720-00002-010
5	1	ICTE-5 D1	DIODE	5VDC	300-00001-002
	10				

MICROPROSE Games

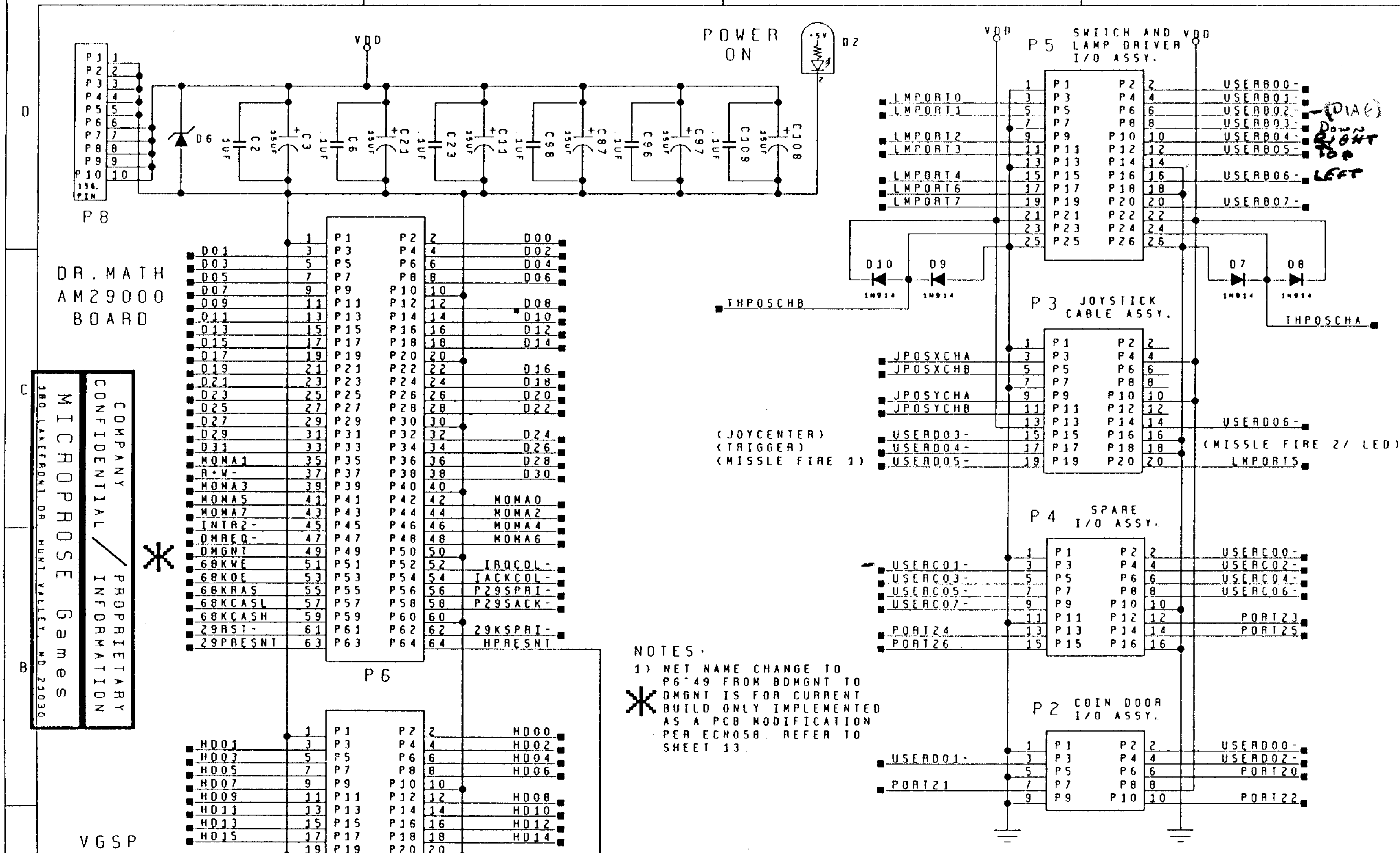
HOST PROCESSOR
PRINTED CIRCUIT BOARD ASSEMBLY

DATE	ECN(s)	REV	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
11-22-89	ECN003	A	A	A																																	
11-28-89	ECN004	B	B										B																								
11-28-89	ECN005	C	C									C																									
		D	D	D	D	D	D	D	D	D	D	D	D	D	D	D																					
5-01-90	ECN017	E	E										E																								
5-01-90	ECN018	F	F	F																																	
5-01-90	ECN019	G	G							G																											
5-01-90	ECN020	H	H		H									H																							
5-01-90	ECN021	J	J							J																											
5-07-90	ECN016	K	K					K																													
9-17-90	ECN056	L	L	L											L	L																					
9-17-90	ECN058	M	M		M							M																									
9-17-90	ECN059	N	N		N	N	N		N	N			N																								
10-1-90	ECN089	O	O			O																															
10-25-90	ECN122	P	P				P																														

COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER: (signature)	DATE: 1-14-91	TITLE: HOST HOST PROCESSOR PCB SCHEMATIC DRAWING
ENGINEER: JAY G. McKIBBIN	DATE	SIZE: C — DRAWING NUMBER: DW-00011C-0011-01
APPROVAL	DATE	REV: P — RELEASE
APPROVAL	DATE	DATE: 1-14-1991_16:05 — SHEET 1 OF 14



NOTES:

1) NET NAME CHANGE TO P6-49 FROM BDMGNT TO DMGNT IS FOR CURRENT BUILD ONLY IMPLEMENTED AS A PCB MODIFICATION PER ECN058. REFER TO SHEET 13.

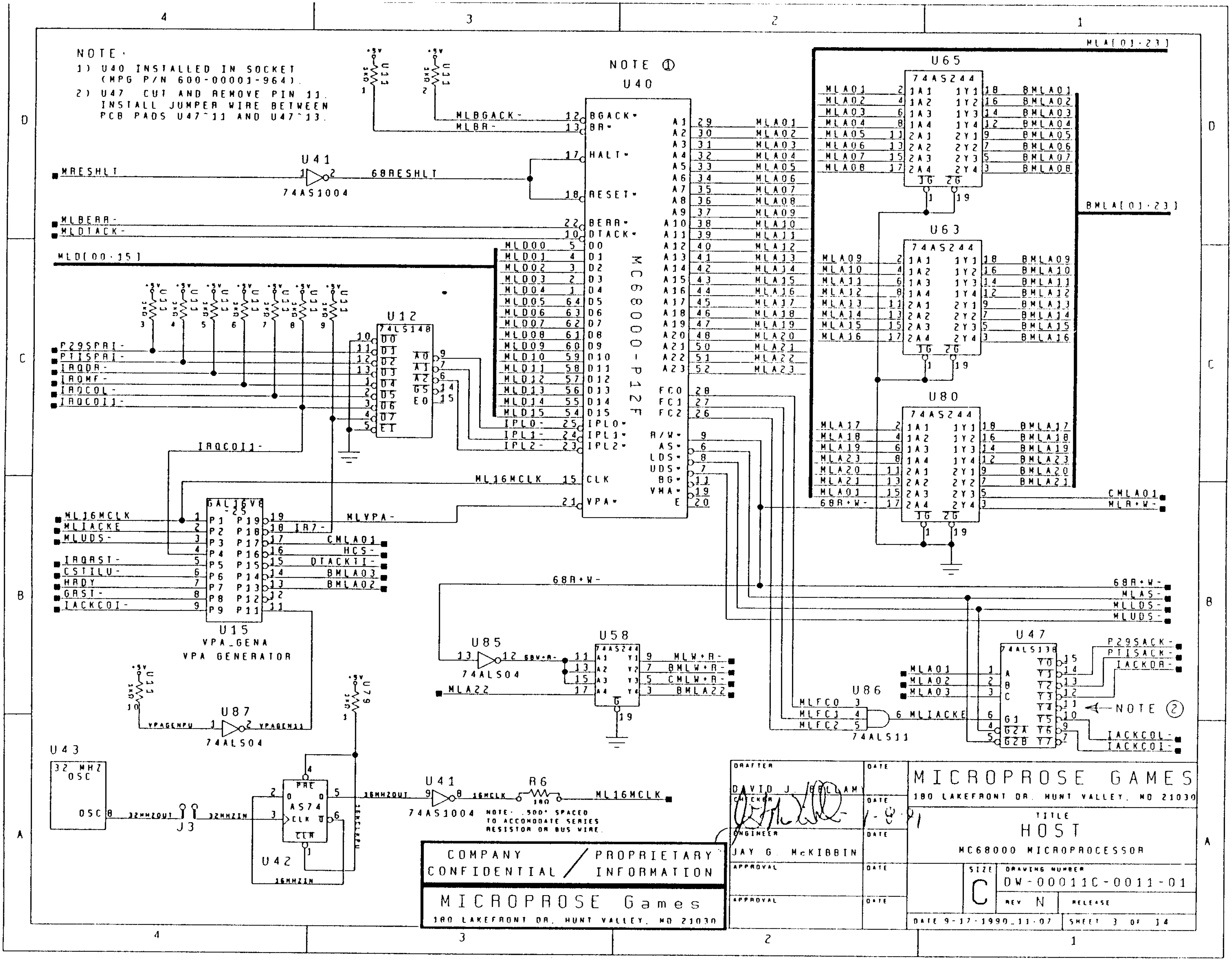
DRAFTER: DAVID J BELLAMY	DATE
CHECKER	DATE: 1-8-90
ENGINEER: JAY G McKIBBIN	DATE
APPROVAL	DATE
APPROVAL	DATE

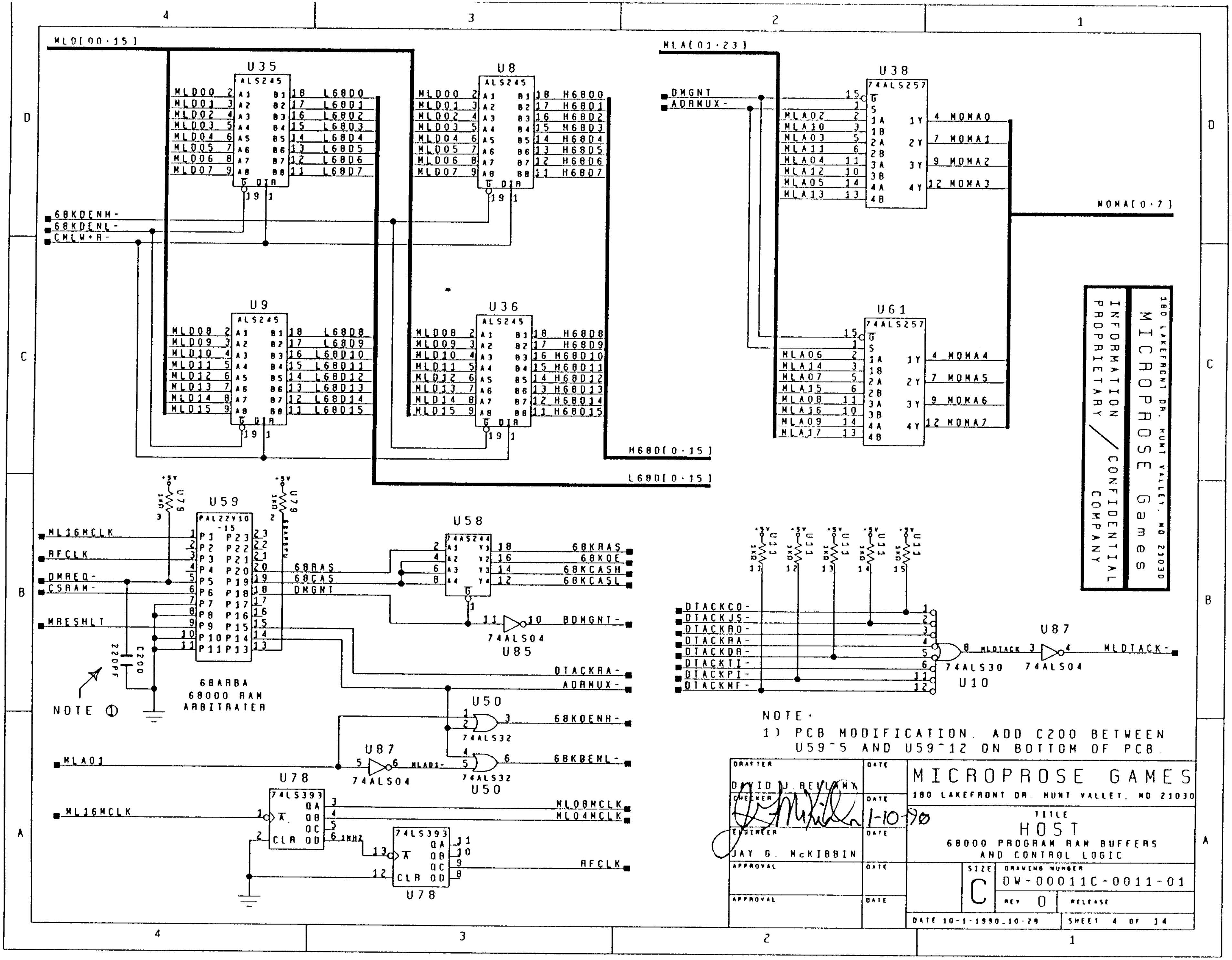
MICROPROSE GAMES
180 LAKEFRONT DR HUNT VALLEY, MD 21030

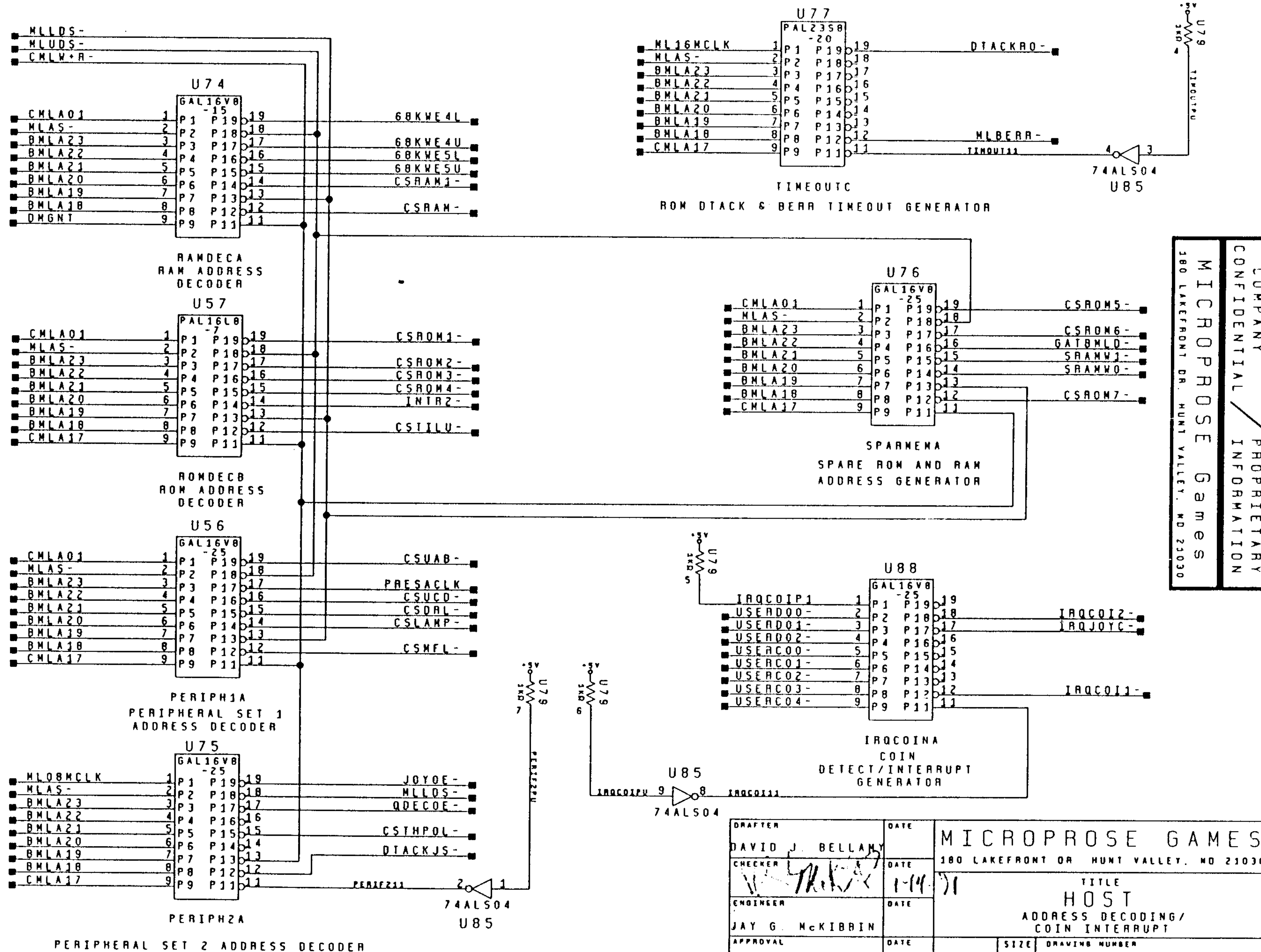
TITLE: HOST
MC68000 HOST PROCESSOR BOARD

SIZE: C — DRAWING NUMBER: DW-00011C-0011-01 — REV: L — RELEASE

DATE 9-27-1990_9:17 — SHEET 2 OF 14


NOTE:
1) U40 INSTALLED IN SOCKET (MPG P/N 600-00001-964).
2) U47 CUT AND REMOVE PIN 11. INSTALL JUMPER WIRE BETWEEN PCB PADS U47-11 AND U47-13.
NOTE ①
U40
MC68000-P12F
U41
74AS1004
U12
74LS148
U15
VPA_GENA
VPA GENERATOR
U65
74AS244
U63
74AS244
U80
74AS244
U85
74ALS04
U58
U87
74ALS04
U86
74ALS11
U47
74LS138
NOTE ②
U43
32 MHZ OSC
J3
U42
AS74
U79
R6
NOTE: .500" SPACED TO ACCOMODATE SERIES RESISTOR OR BUS WIRE.
COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION
MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030
DRAFTER DAVID J. BELLAMY
ENGINEER JAY G. McKIBBIN
MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030
TITLE
HOST
MC68000 MICROPROCESSOR
SIZE C
DRAWING NUMBER DW-00011C-0011-01
REV N
DATE 9-17-1990_11:07
SHEET 3 OF 14


MLD[00·15]
U35
ALS245
U8
ALS245
U9
ALS245
U36
ALS245
MLA[01·23]
U38
74ALS257
U61
74ALS257
MOMA[0·7]
H68D[0·15]
L68D[0·15]
68KDENH-
68KDENL-
CMLW+R-
DMGNT
ADRMUX-
U59
PAL22V10 -15
68ARBA
68000 RAM ARBITRATER
U58
74AS244
68KRAS
68KOE
68KCASH
68KCASL
BDMGNT-
74ALS04
U85
DTACKRA-
ADRMUX-
U50
74ALS32
68KDENH-
68KDENL-
ML16MCLK
RFCLK
DMREQ-
CSRAM-
MRESHLT
MLA01
U87
74ALS04
U78
74LS393
ML08MCLK
ML04MCLK
RFCLK
C200
220PF
NOTE ①
DTACKCO-
DTACKJS-
DTACKRO-
DTACKRA-
DTACKDA-
DTACKTI-
DTACKPI-
DTACKMF-
74ALS30
U10
MLDTACK-
PROPRIETARY / CONFIDENTIAL
INFORMATION
COMPANY
MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030
NOTE:
1) PCB MODIFICATION. ADD C200 BETWEEN U59~5 AND U59~12 ON BOTTOM OF PCB.
MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030
DRAFTER DAVID J BELLAMY
CHECKER
DATE 1-10-90
ENGINEER JAY G. McKIBBIN
APPROVAL
TITLE HOST
68000 PROGRAM RAM BUFFERS AND CONTROL LOGIC
SIZE C
DRAWING NUMBER DW-00011C-0011-01
REV 0
RELEASE
DATE 10-1-1990_10:29
SHEET 4 OF 14



DRAFTER	DAVID J. BELLAMY
CHECKER	DATE 1-14-91
ENGINEER	JAY G. McKIBBIN
APPROVAL	
APPROVAL	

MICROPROSE GAMES
180 LAKEFRONT DR HUNT VALLEY, MD 21030

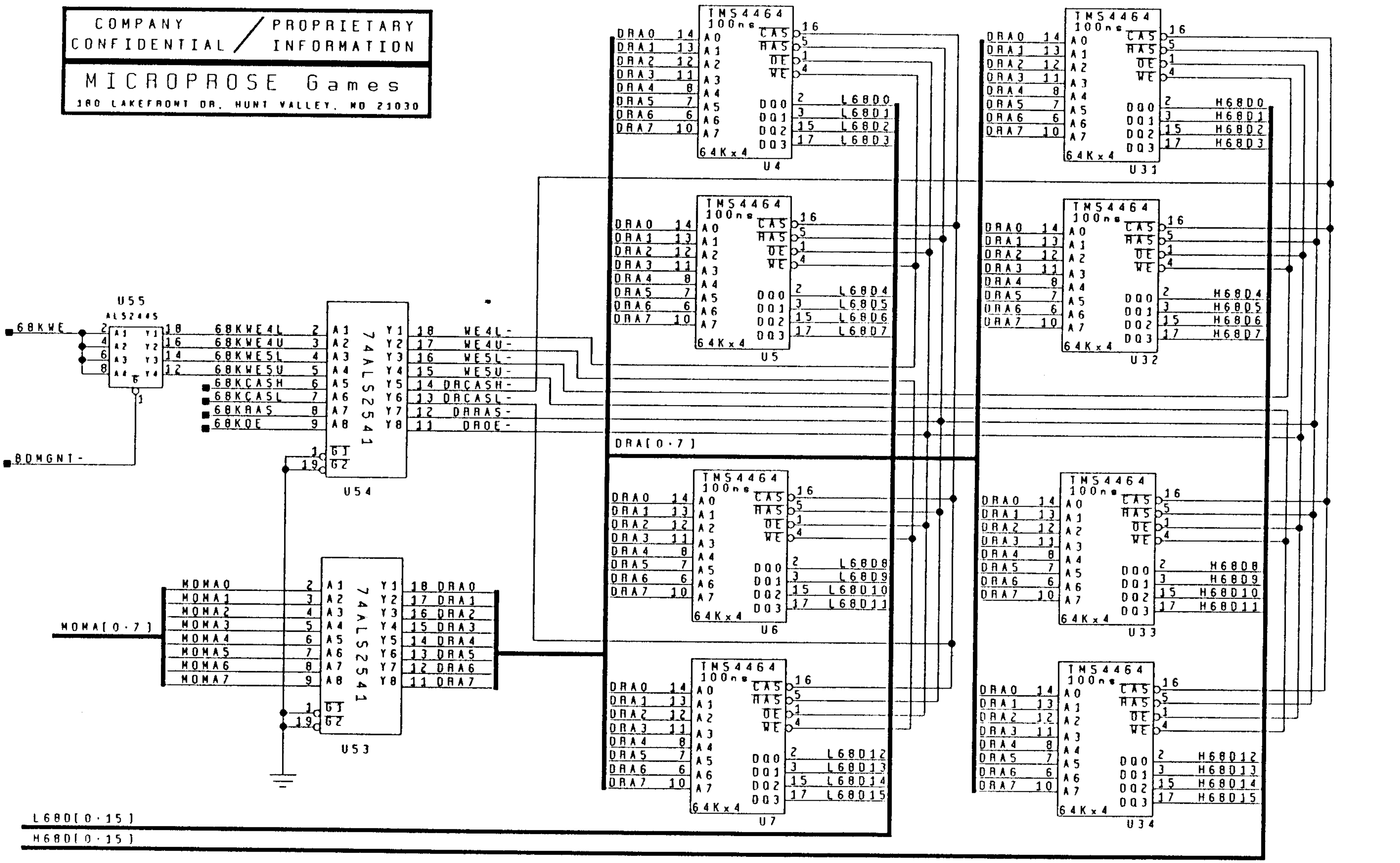
TITLE
HOST
ADDRESS DECODING/
COIN INTERRUPT

SIZE C DRAWING NUMBER DW-00011C-0011-01
REV P RELEASE

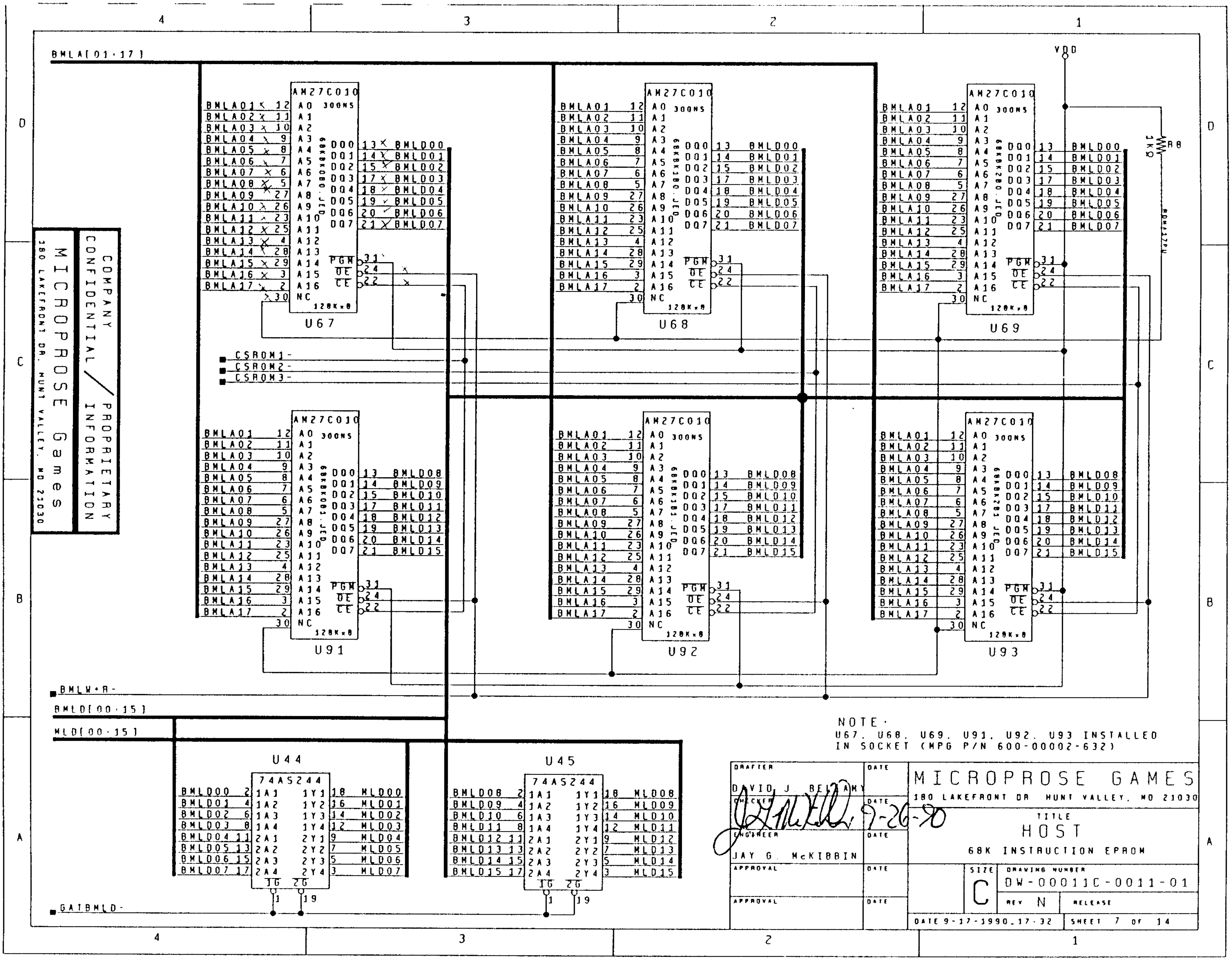
DATE 10-25-1990_14:42 SHEET 5 OF 14

COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

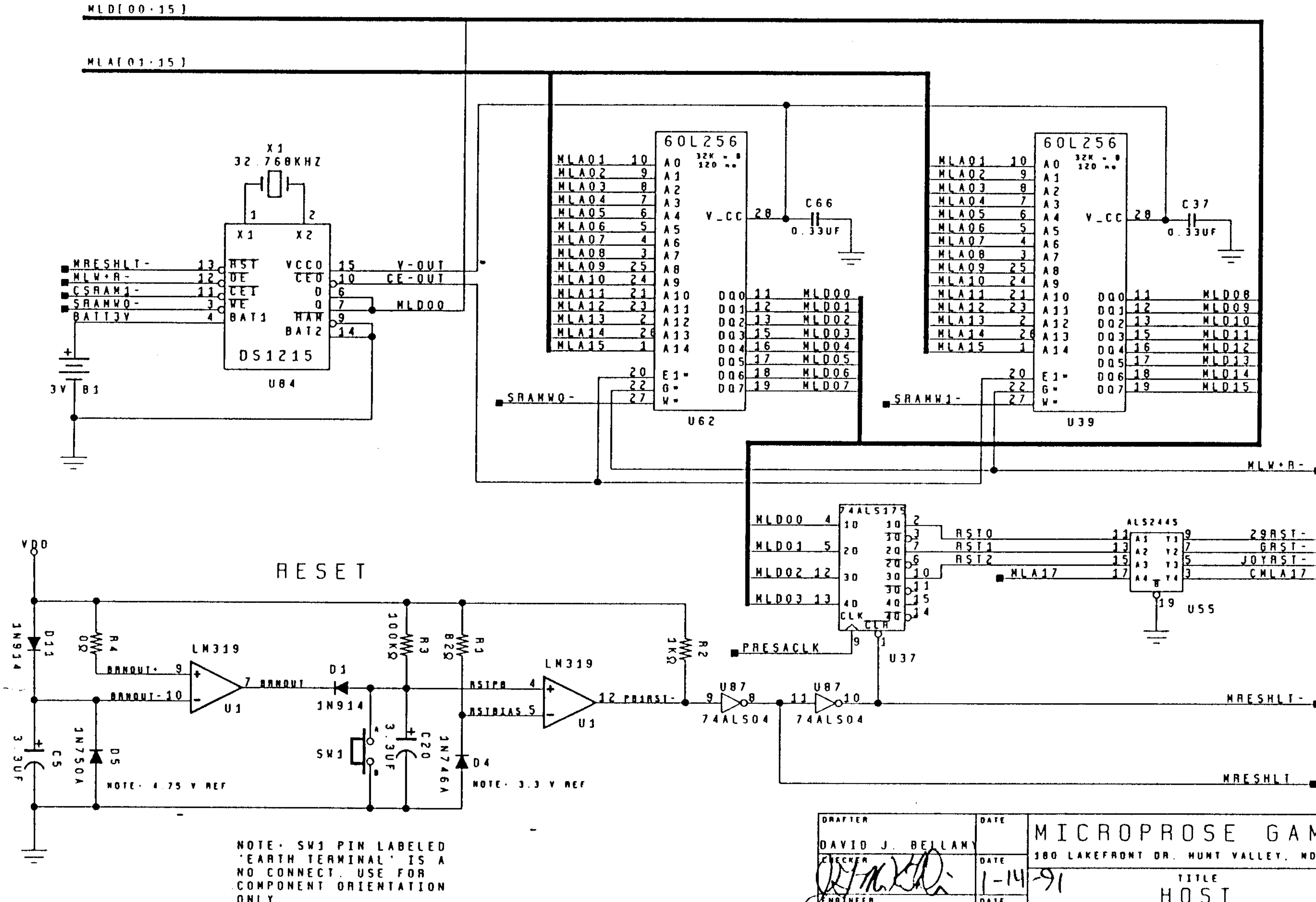
MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030



DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER	DATE 9-26-90	TITLE HOST 68000 PROGRAM RAM ARRAY
ENGINEER: MICHAEL WILLIAMS	DATE	
APPROVAL	DATE	SIZE C — DRAWING NUMBER DW-00011C-0011-01
APPROVAL	DATE	REV K — RELEASE
		DATE 5-7-1990 12:47 — SHEET 6 OF 14



BMLA[01-17]
AM27C010 300NS
U67
U68
U69
U91
U92
U93
128K×8
PGM
OE
CE
NC
VDD
R8
1KΩ
CSROM1-
CSROM2-
CSROM3-
BMLW+R-
BMLD[00-15]
MLD[00-15]
U44
U45
74AS244
GAIBMLD-
COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION
MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030
NOTE:
U67, U68, U69, U91, U92, U93 INSTALLED IN SOCKET (MPG P/N 600-00002-632)
DRAFTER DAVID J. BELLAMY
CHECKER
9-26-90
ENGINEER JAY G. McKIBBIN
APPROVAL
MICROPROSE GAMES
180 LAKEFRONT DR HUNT VALLEY, MD 21030
TITLE
HOST
68K INSTRUCTION EPROM
SIZE C
DRAWING NUMBER DW-00011C-0011-01
REV N
RELEASE
DATE 9-17-1990_17:32
SHEET 7 OF 14



NOTE: SW1 PIN LABELED 'EARTH TERMINAL' IS A NO CONNECT. USE FOR COMPONENT ORIENTATION ONLY.

COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

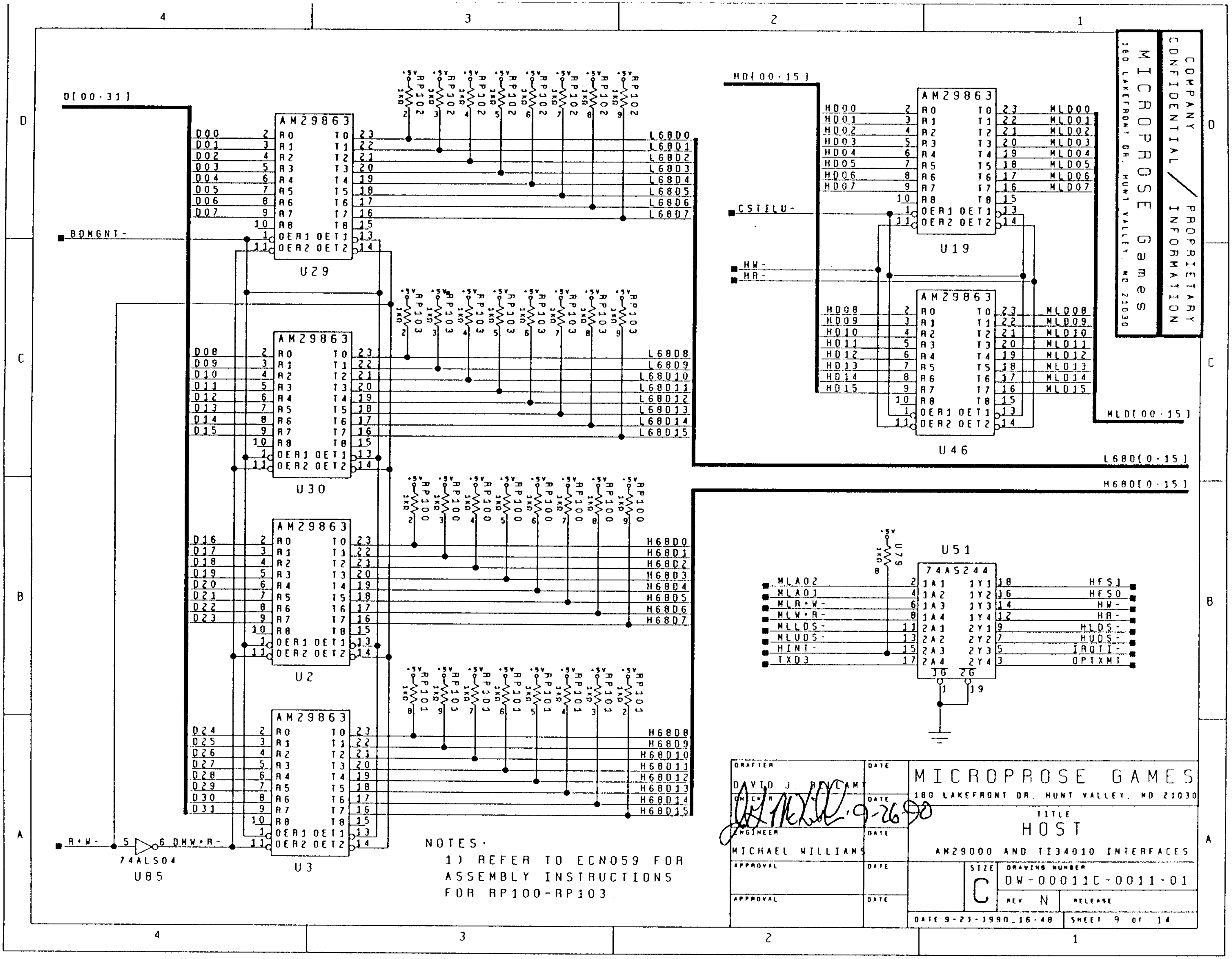
DRAFTER: DAVID J. BELLAMY	DATE
CHECKER	DATE: 1-14-91
ENGINEER: JAY G. McKIBBIN	DATE
APPROVAL	DATE
APPROVAL	DATE

MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

TITLE: HOST
WATCHDOG/RESET CIRCUIT AND BATTERY BACKUP STATIC RAM

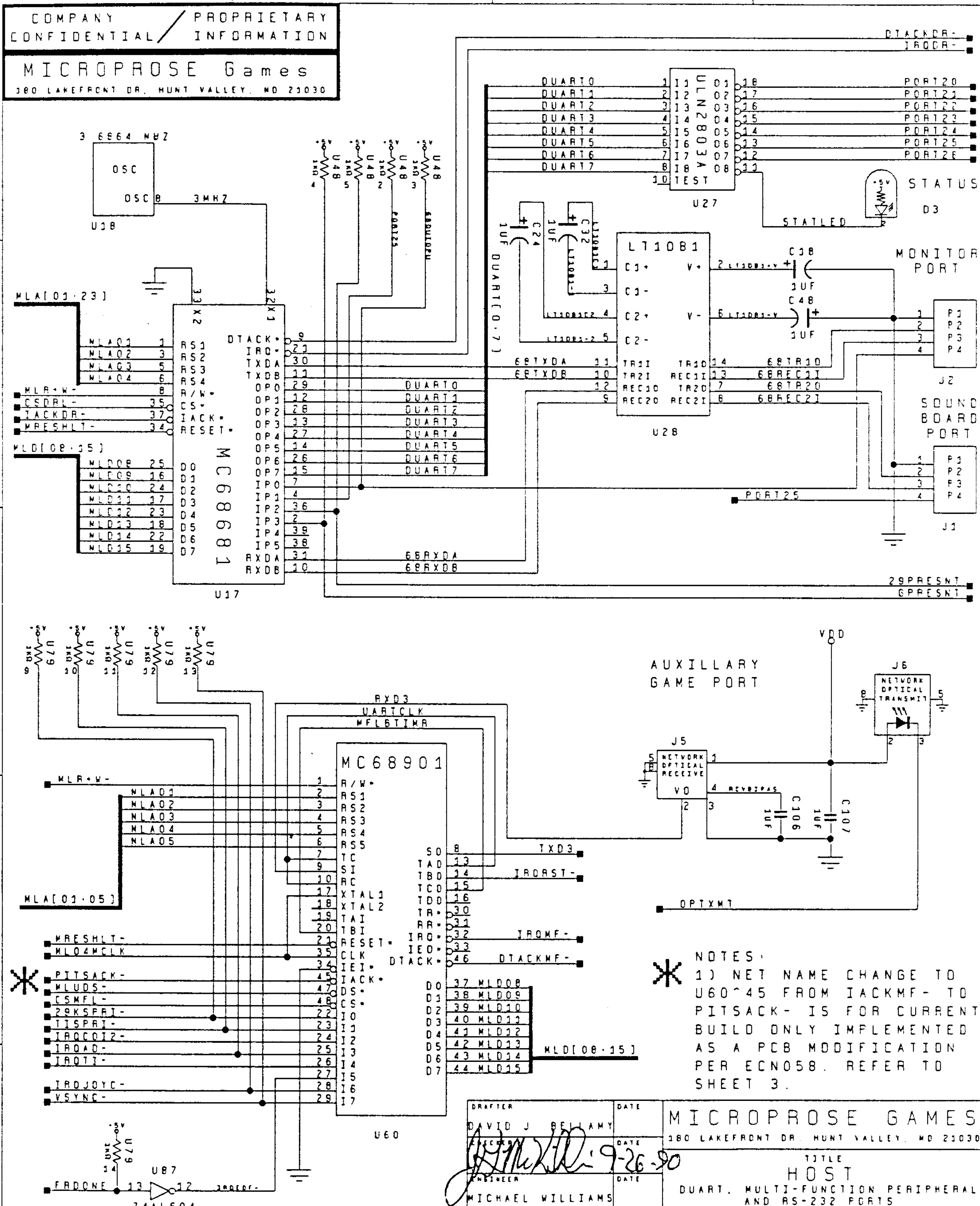
SIZE: C | DRAWING NUMBER: DW-00011C-0011-01 | REV: N | RELEASE

DATE 9-17-1990_15:25 | SHEET 8 OF 14


COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION
MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030
D[00:31]
BDMGNT-
R+W-
DMW+R-
74ALS04
U85
AM29863
U29
U30
U2
U3
U19
U46
HD[00:15]
CSTILU-
HW-
HR-
MLD[00:15]
L68D[0:15]
H68D[0:15]
RP100
RP101
RP102
RP103
+5V
1KΩ
U51
74AS244
U79
MLA02
MLA01
MLR+W-
MLW+R-
MLLDS-
MLUDS-
HINT-
TXD3
HFS1
HFS0
HW-
HR-
HLDS-
HUDS-
IRQTI-
OPTXMT
NOTES:
1) REFER TO ECN059 FOR ASSEMBLY INSTRUCTIONS FOR RP100-RP103
DRAFTER
DAVID J. BELLAMY
CHECKER
9-26-90
ENGINEER
MICHAEL WILLIAMS
APPROVAL
DATE
MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030
TITLE
HOST
AM29000 AND TI34010 INTERFACES
SIZE C
DRAWING NUMBER
DW-00011C-0011-01
REV N
RELEASE
DATE 9-21-1990_16:48
SHEET 9 OF 14

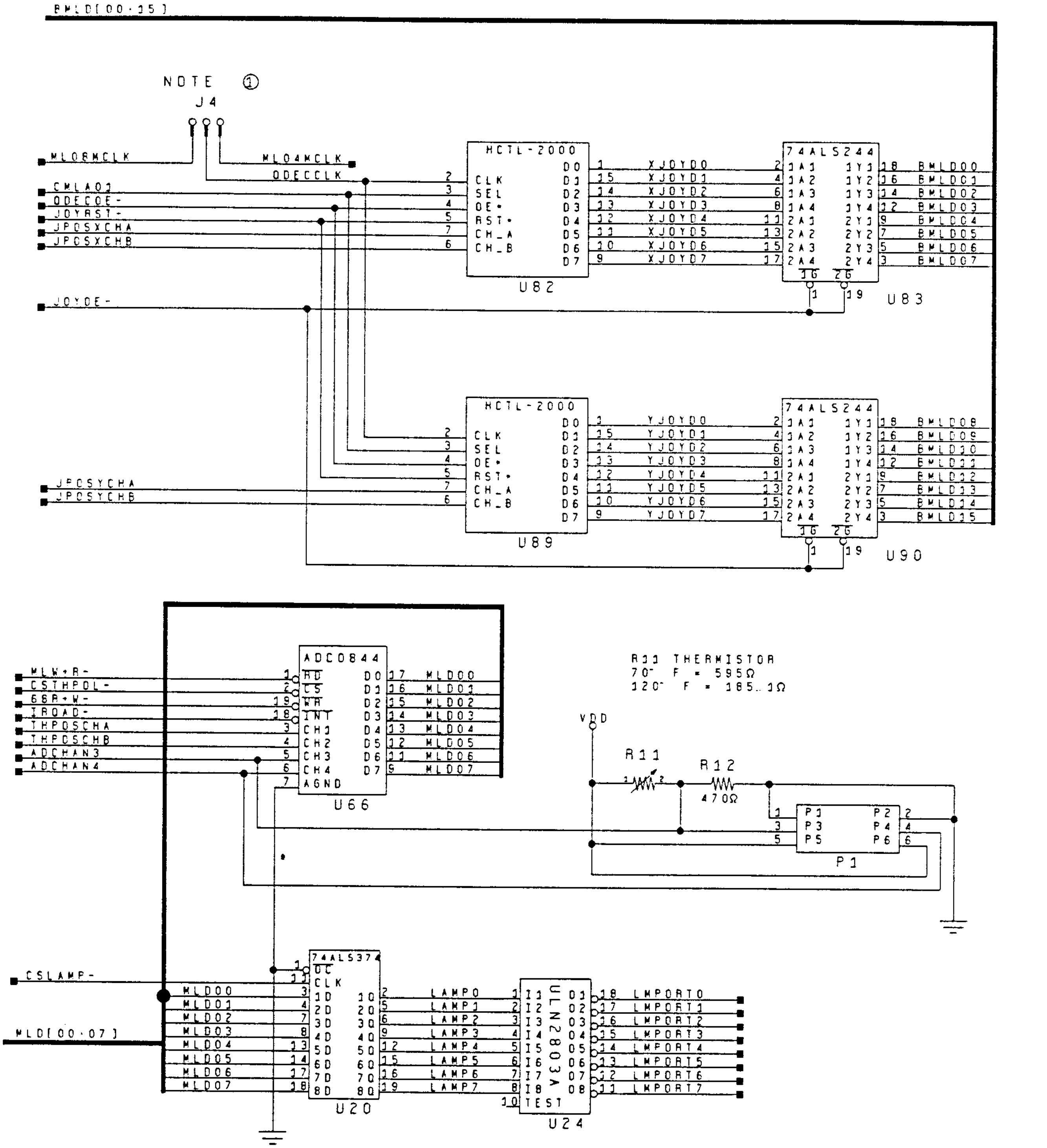
COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030



NOTES:
1) NET NAME CHANGE TO U60^45 FROM IACKMF- TO PITSACK- IS FOR CURRENT BUILD ONLY IMPLEMENTED AS A PCB MODIFICATION PER ECN058. REFER TO SHEET 3.

DRAFTER: DAVID J BELLAMY	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER: [signature] 9-26-90	TITLE: HOST DUART, MULTI-FUNCTION PERIPHERAL AND RS-232 PORTS
ENGINEER: MICHAEL WILLIAMS	SIZE: C — DRAWING NUMBER: DW-00011C-0011-01
APPROVAL	REV: M — RELEASE
APPROVAL	DATE 9-21-1990_17:09 — SHEET 10 OF 14



NOTE:
1) REF ECN059. INSTALL WIRE STAPLE BETWEEN J4-2 AND J4-3.

COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

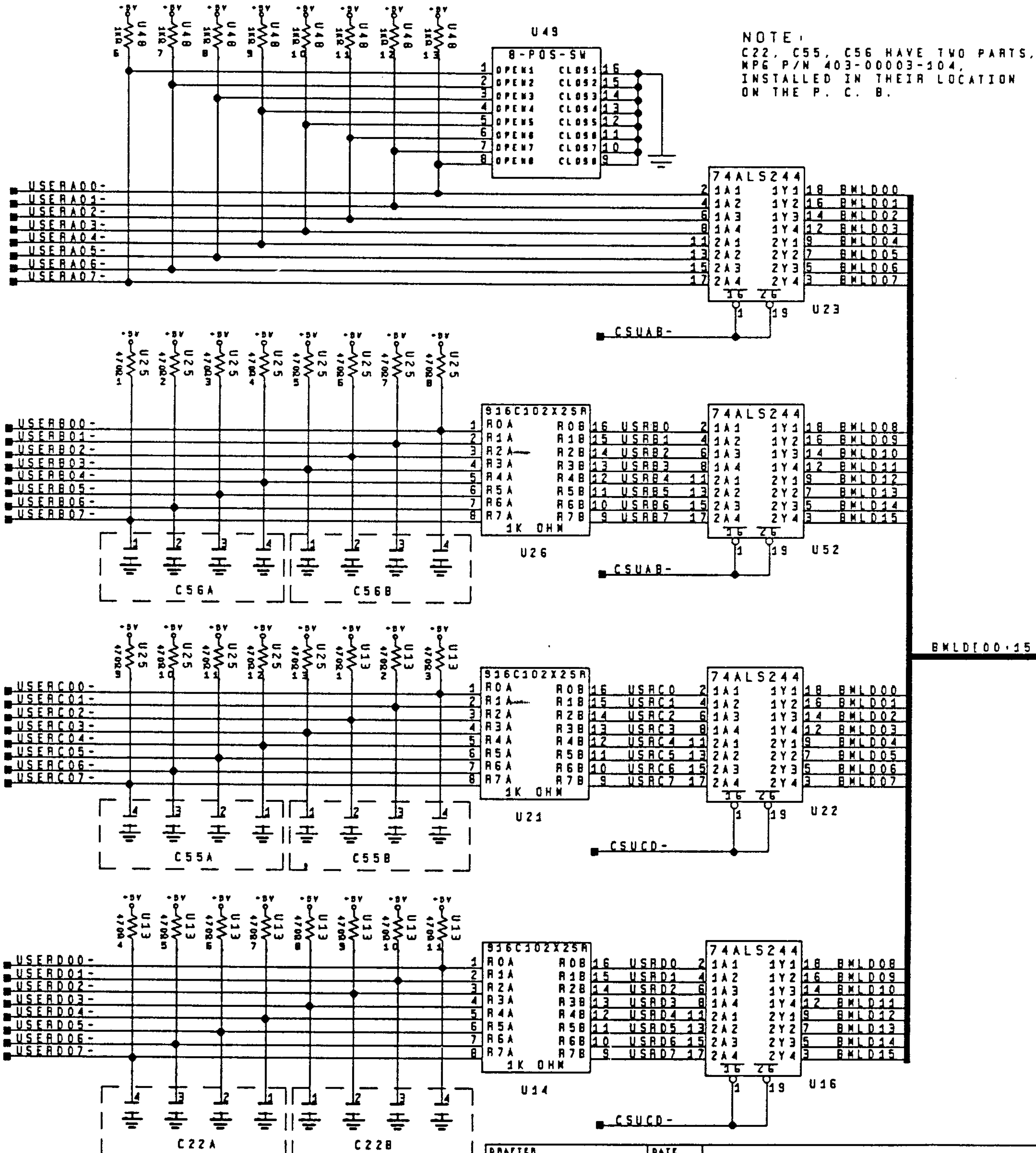
DRAFTER: DAVID J BELLAMY	DATE
CHECKED: [signature] 9-25-90	DATE
ENGINEER: MICHAEL WILLIAMS	DATE
APPROVAL	DATE
APPROVAL	DATE

MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

TITLE: HOST
IO INTERFACE AND LAMP DRIVERS

SIZE: C — DRAWING NUMBER: DW-000110-0011-01
REV: N — RELEASE:
DATE 9-21-1990_17:18 — SHEET 11 OF 14

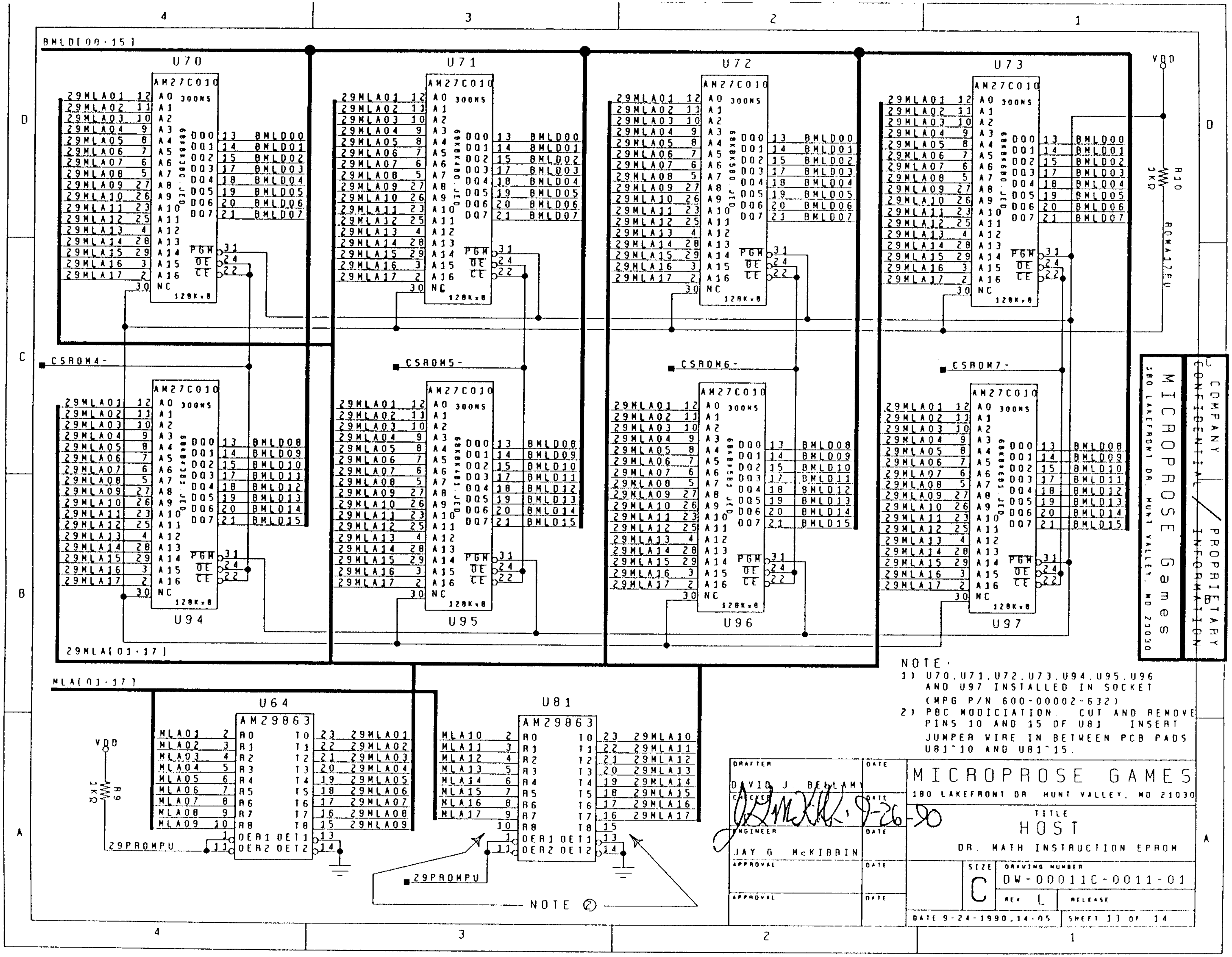
NOTE:
C22, C55, C56 HAVE TWO PARTS, MPG P/N 403-00003-104, INSTALLED IN THEIR LOCATION ON THE P. C. B.

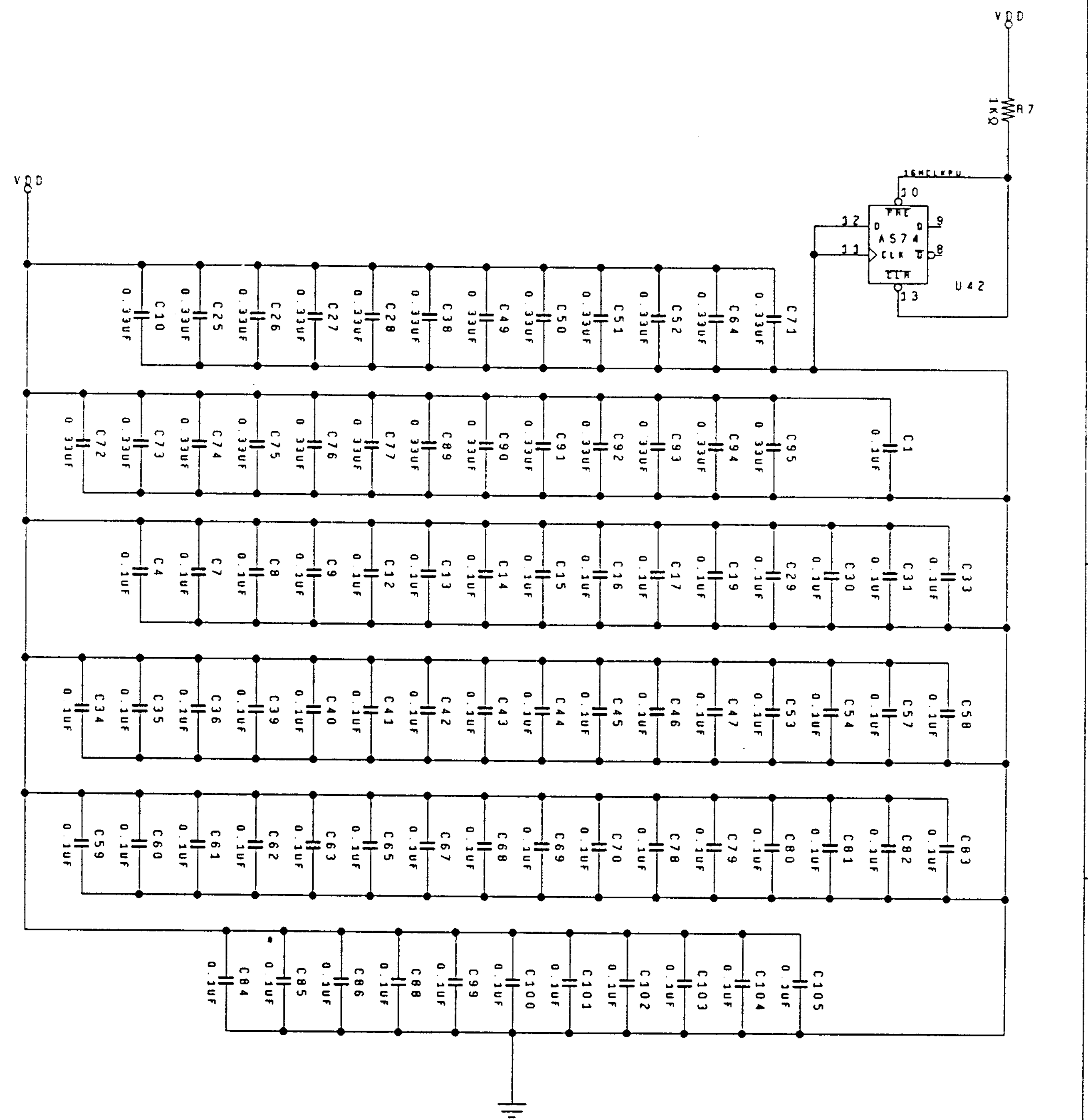


DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER	DATE 5/1/90	TITLE HOST USER SWITCH INPUT INTERFACE	
ENGINEER: MICHAEL WILLIAMS	DATE		
APPROVAL	DATE	SIZE C	DRAWING NUMBER DW-00011C-0011-01
APPROVAL	DATE	REV H	RELEASE
		DATE 5-1-1990_13:30	SHEET 12 OF 14

COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030


BMLD[00:15]
U70
U71
U72
U73
AM27C010
300NS
128Kx8
U94
U95
U96
U97
CSROM4-
CSROM5-
CSROM6-
CSROM7-
29MLA[01:17]
MLA[01:17]
U64
U81
AM29863
VDD
R9
1KΩ
R10
1KΩ
ROMA17PU
29PROMPU
NOTE ②
MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030
COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION
NOTE:
1) U70,U71,U72,U73,U94,U95,U96 AND U97 INSTALLED IN SOCKET (MPG P/N 600-00002-632)
2) PBC MODICIATION. CUT AND REMOVE PINS 10 AND 15 OF U81. INSERT JUMPER WIRE IN BETWEEN PCB PADS U81~10 AND U81~15.
DRAFTER
DAVID J. BELLAMY
CHECKED
9-26-90
ENGINEER
JAY G. McKIBBIN
APPROVAL
DATE
MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030
TITLE
HOST
DR. MATH INSTRUCTION EPROM
SIZE
C
DRAWING NUMBER
DW-00011C-0011-01
REV L
RELEASE
DATE 9-24-1990,14:05
SHEET 13 OF 14



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR HUNT VALLEY, MD 21030	
CHECKER	DATE: 1-14-91	TITLE: HOST POWER DECOUPLING	
ENGINEER: JAY G McKIBBIN	DATE		
APPROVAL	DATE	SIZE: C	DRAWING NUMBER: DW-00011C-0011-01
APPROVAL	DATE	REV: D	RELEASE
		DATE 3-22-1990_17:18	SHEET 14 OF 14

BILL OF MATERIALS
HOST PROCESSOR P.C.B.
ASSEMBLY: A10-00001-001

DATE	ECN	REV	SHEET NUMBER																							
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
	ECN	A	A					A	A																		
	ECN	B	B				B																				
	ECN	C	C						C																		
3-21-90	ECN	D	D	D	D	D	D	D	D																		
5-01-90	ECN017	E	E						E																		
5-01-90	ECN018	F	F		F																						
5-01-90	ECN020	G	G	G																							
5-01-90	ECN021	H	H		H																						
5-07-90	ECN016	K	K			K																					
9-11-90	ECN059	L	L		L	L	L	L	L																		
5-07-90	ECN080	M	M					M																			
9-21-90	ECN089	N	N		N																						
9-21-90	ECN109	O	O						O																		
10-08-90	ECN113	P	P					P																			
10-23-90	ECN122	R	R			R			R																		
10-25-90	ECN123	S	S					S																			
1-08-91	ECN150	T	T				T		T																		

DRAFTER DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DRIVE, HUNT VALLEY, MD 21030
CHECKER [signature]	DATE 1-14-91	
ENGINEER JAY G. McKIBBIN	DATE	TITLE BILL OF MATERIALS HOST PROC. P.C.B. A10-00001-001
APPROVAL	DATE	DWG NO PL-00011A-0011-01 — REV T
APPROVAL	DATE	DATE 1-14-1991_11:29 — SHEET 1 OF 7 — A

MICROPROSE GAMES, 180Lakefront Drive, Hunt Valley, Maryland 21030
PROJECT NAME: HOST PROCESSOR DRWG. NO.: PL-00011A-0011-01 REV: T
DATE: Wed 5-Oct-1990

ITEM	QTY	PART NUMBER REF. DES.	PART DESCRIP	VALUE	MPG P/N
1	2	914C471X2PE U13,U25	PULRESPAK	470OHM	501-00022-471
2	1	90B08S U49	8POSDIPSW		625-00001-208
3	3	916C102X2SR U14,U21,U26	ISORESPAK	1K	501-00031-102
4	6	929CZ5U104Z050B C22A,C22B,C55A,C55B,C56A,C56B	DIPCAPx4	.1 UF	403-00003-104
5	1	SN74ALS374N U20	OCTALDFLOPS		200-00374-200
6	7	SN74ALS244AN U16,U22,U23,U52,U55,U83,U90	OCTBUFFR		200-00244-200
7	1	ADC0844CCN U66	A/DCONVERTR		246-00001-200
8	2	HCTL-2000 U82,U89	QUADDECODER		246-00002-200
9	2	ULN2803A U24,U27	LAMPDRIVER		279-00001-200
10	67	C410C104M5U5CA C4,C1,C33,C7,C8,C14,C13,C12,C9,C31,C30,C29,C19,C17,C15, C16,C45,C44,C46,C47,C53,C54,C57,C58,C40,C41,C42,C43,C39, C36,C34,C35,C70,C69,C78,C79,C80,C81,C82,C83,C63,C65,C67, C68,C62,C61,C59,C60,C85,C84,C86,C88,C102,C101,C100,C99, C105,C103,C104,C107,C106,C109,C96,C98,C23,C6,C2	AXCERCAP	0.1UF	402-00382-104
11	[0]	68001-503 [J4]	3PINJUMPR	.100"	610-00002-003
12	0	92915-R-HS-1 J5	FIBROPTRCV		240-00004-001
13	0	92915-T-DD J6	FIBROPTXMT		240-00005-001
14	1	X0-53B-3.6864 U18	DIPOSCILATR	3.6864M	290-00002-003
15	* 1	MC68681-P U17	DUART		240-00003-200
16	1	LT1081CN U28	RS232DRVR		235-00001-200

ITEM	QTY	PART NUMBER REF. DES.	PART DESCRIP	VALUE	MPG P/N
17	4	173D105X0035V C18,C24,C32,C48	AXTANTCAP	1UF	422-00072-105
18 D*	1	MC68901-P U60	MFPERIPHERL		130-68901-204
19	8	AM29C863PC U2,U3,U19,U29,U30,U46,U64,U81	9BIBUSDRVR		235-00005-200
20	2	22-05-7048 J1,J2	MOLEX4PIN	.100"	610-00601-004
21	5	1N914 D1,D7,D8,D9,D10,D11	DIODE		300-00002-003
22	5	CCF-07 102G R2,R7,R8,R9,R10	2%MFRES	1K	503-00002-102
23	2	173D335X0020V C5,C20	AXTANTCAP	3.3UF	422-00062-335
24	1	SA101A221JAA C200	AXCERCAP	220PF	402-00195-221
25	1	CCF-07 104G R3	2%MFRES	100K	503-00002-104
26	1	1N746A D4	ZENER		301-00002-033
27	1	WX-32.768KHZ X1	CRYSTAL	32KHZ	290-00004-32K
28	1	KSA1A211 SW1	PBSWITCH		625-00002-001
29	1	LM319N U1	VOLTCOMPAR	14DIP	280-00003-200
30	1	DS1215 U84	R/TCLK		291-01215-200
31	27	C412C334M5U5CA C52,C51,C50,C49,C38,C28,C27,C26,C25,C10,C91,C90,C72,C73, C74,C75,C89,C77,C76,C95,C94,C93,C92,C64,C71,C37,C66	AXCERCAP	0.33UF	402-00382-334
32	1	15-51-04-410-000 B1	LITHBATT	3VOLT	390-00001-001
33 *	2	MCM60L256AP12 U39,U62	32Kx8SRAM	120NS	221-00003-212
34	1	SN74ALS175N U37	QUADDFLOPS		200-00175-200

2-14-91

ITEM	QTY	PART NUMBER REF. DES.	PART DESCRIP	VALUE	MPG P/N
35					
36	2	SN74ALS2541N U53,U54	OCTINVDRVR		200-02541-200
37 *	8	TMS4464-10NL U4,U5,U6,U7,U31,U32,U33,U34	64Kx4DRAM	100NS	220-00001-210
38 A	1	AMPAL23S8-20PC U77	TIMEOUTC	25NS	120-00001-206
39 A	1	GAL16V8A-25P U75	PERIPH2A	25NS	120-00001-005
40 A	1	GAL16V8A-25P U15	VPA_GENA	25NS	120-00001-000
41 A	1	GAL16V8A-25P U74	RAMDECA	15NS	120-00001-002
42 B	1	GAL22V10-15P U59	68ARBA	15NS	120-00001-001
43	1	1N750A D5	ZENER		301-00002-047
44	1	SN74LS393N U78	QUADCOUNTR		202-00393-200
45	1	SN74ALS30AN U10	8INNAND		200-00030-200
46	1	SN74ALS32N U50	QUAD2INOR		200-00032-200
47	2	SN74ALS257N U38,U61	2:1MUX		200-00257-200
48	4	SN74ALS245AN U8,U9,U35,U36	OCTBIDBUFR		200-00245-200
49	1	SN74LS148N U12	8:3ENCODER		202-00148-200
50	1	SN74ALS138N U47	3:8DEMUX		200-00138-200
51	1	68001-502 J3	2PINJUMP	.100"	610-00002-002
52	1	X0-43D-32 U43	DIPOSCILATR	32MHZ	290-00001-032
53	1	SN74AS74N U42	DUALDFLOPS		201-00074-200

ITEM	QTY	PART NUMBER REF. DES.	PART DESCRIP	VALUE	MPG P/N
54	7	SN74AS244N U44,U45,U51,U58,U63,U65,U80	OCTBUFFR		201-00244-200
55	1	SN74AS1004AN U41	HEXINERTR		201-01004-200
56	1	SN74ALS11AN U86	TRI3INAND		200-00011-200
57	2	SN74ALS04BN U85,U87	HEXINVERTR		200-00004-200
58	1	CCF-07 180G R6	2%MFRES	18OHM	503-00002-180
59	3	916C102X2PE U11,U48,U79	PULLRESPAK	1KOHM	501-00032-102
60 E*	1	MC68000-P12F U40	MICROPROCESR	16MHZ	135-68000-216
61	2	HLMP3600 D2,D3	LEDW/RES	RED	305-00003-002
62	6	173D156X0015W C3,C11,C21,C87,C97,C108	AXTANTCAP	15UF	422-00052-156
63	1	ICTE-5 D6	ZENER	5V	300-00001-002
64	1	71922-016 P4	2x8HEADER	.100"	610-00800-016
65	1	71922-020 P3	2x10HEADER	.100"	610-00800-020
66	1	71922-026 P5	2x13HEADER	.100"	610-00800-026
67	1	26-60-5100 P8	MOLEX10PIN	.156"	610-00601-010
68	1	71922-140 P7	2x20HEADER	.100"	610-00900-040
69	1	533249-1 P6	2x32HEADER	.100"	6 - -064
70					
71 A	1	GAL16V8A-25P U76	SPARMEMA	25NS	120-00001-007

ITEM		QTY	PART NUMBER REF. DES.	PART DESCRIP	VALUE	MPG P/N
72	A	1	GAL16V8A-25P U56	PERIPH1A	25NS	120-00001-004
73	A	1	TIBPAL16L8-7CN U57	ROMDECB	7.5NS	120-00001-103
74	A	1	GAL16V8A-25P U88	IRQCOINA	25NS	120-00001-008
75		1	71922-006 P1	2x3HEADER	.100"	610-00800-006
76		1	71922-010 P2	2x5HEADER	.100"	610-00800-010
77		1	68786-102 J3	SHUNT		715-00001-001
78		[0]	SRS8-12-01	SPACER	.75 "	700-00001-003
79		5	7-0805G-5 TP1,TP2,TP3,TP4,TP5	TEST PIN		710-00001-001
80		1	7-22870-5 TP6	TEST PIN		710-00001-002
81	C*	1	AM27C010-305DC U67	128Kx8EPROM 68KBK0B0.001	300NS	110-00001-100
82	C*	1	AM27C010-305DC U91	128Kx8EPROM 68KBK0B1.001	300NS	110-00001-101
83	C*	1	AM27C010-305DC U68	128Kx8EPROM 68KBK1B0.001	300NS	110-00001-102
84	C*	1	AM27C010-305DC U92	128Kx8EPROM 68KBK1B1.001	300NS	110-00001-103
85	C*	1	AM27C010-305DC U69	128Kx8EPROM 68KBK2B0	300NS	110-00001-004
86	C*	1	AM27C010-305DC U93	128Kx8EPROM 68KBK2B1	300NS	110-00001-005
87	C*	1	AM27C010-305DC U70	128Kx8EPROM 68KBK3B0	300NS	110-00001-006
88	C*	1	AM27C010-305DC U94	128Kx8EPROM 68KBK3B1	300NS	110-00001-007
89	C*	1	AM27C010-305DC U71	128Kx8EPROM 68KBK4B0	300NS	110-00001-008
90	C*	1	AM27C010-305DC U95	128Kx8EPROM 68KBK4B1	300NS	110-00001-009

ITEM	QTY	PART NUMBER REF. DES.	PART DESCRIP	VALUE	MPG P/N
91 C*	[0]	AM27C010-305DC **[U72]**	128Kx8EPROM 68KBK5B0	300NS	110-00001-010
92 C*	[0]	AM27C010-305DC **[U96]**	128Kx8EPROM 68KBK5B1	300NS	110-00001-011
93 C*	[0]	AM27C010-305DC **[U73]**	128Kx8EPROM 68KBK6B0	300NS	110-00001-012
94 C*	[0]	AM27C010-305DC **[U97]**	128Kx8EPROM 68KBK6B1	300NS	110-00001-013
95 A	2	ICO-320MTT UX77,UX88**[UX15,UX56,UX57,UX74,UX75,UX76]**	SOCKET		600-00001-320
96 B	[0]	ICO-324MTT **[UX59]**	SOCKET		600-00001-324
97 C	10	2-644018-2 UX67,UX68,UX69,UX70,UX71,UX91,UX92,UX93,UX94,UX95, **[UX72,UX73,UX96,UX97]**	SOCKET		600-00002-632
98 D	[0]	1848-AG111D **[UX60]**	SOCKET		600-00001-648
99 E	1	110-91-964-41-001 UX40	SOCKET		600-00001-964
100	1	RL2003-289-95-D1 R11	TEMPSENSOR	500OHM	508-00001-501
101	1	CCF-07 471G R12	2PCMFRES	470OHM	503-00002-471
102	1	CCF-07 820G R1	2PCMFRES	82 OHM	503-00002-820
103	1	FRJ-50 R4	JUMPRES	0 OHM	503-00001-000
104	4	CSC09A01102G RP100,RP101,RP102,RP103	8RESSIPPAK	1 KOHM	501-10008-102

	270				

NOTES:

(1) PARTS REQUIRING 0.33UF DECOUPLING CAPS ARE MARKED (*) IN BETWEEN ITEM NO. AND QTY. COLUMNS.

(2) PARTS REQUIRING SOCKETS ARE MARKED WITH A LETTER TO CORRESPOND WITH SOCKETS WITH THE SAME LETTER.

(3) PARTS WITH REFERENCE DESIGNATORS IN BRACKETS [] ARE WILL NOT BE POPULATED DURING PRODUCTION.

MICROPROSE Games

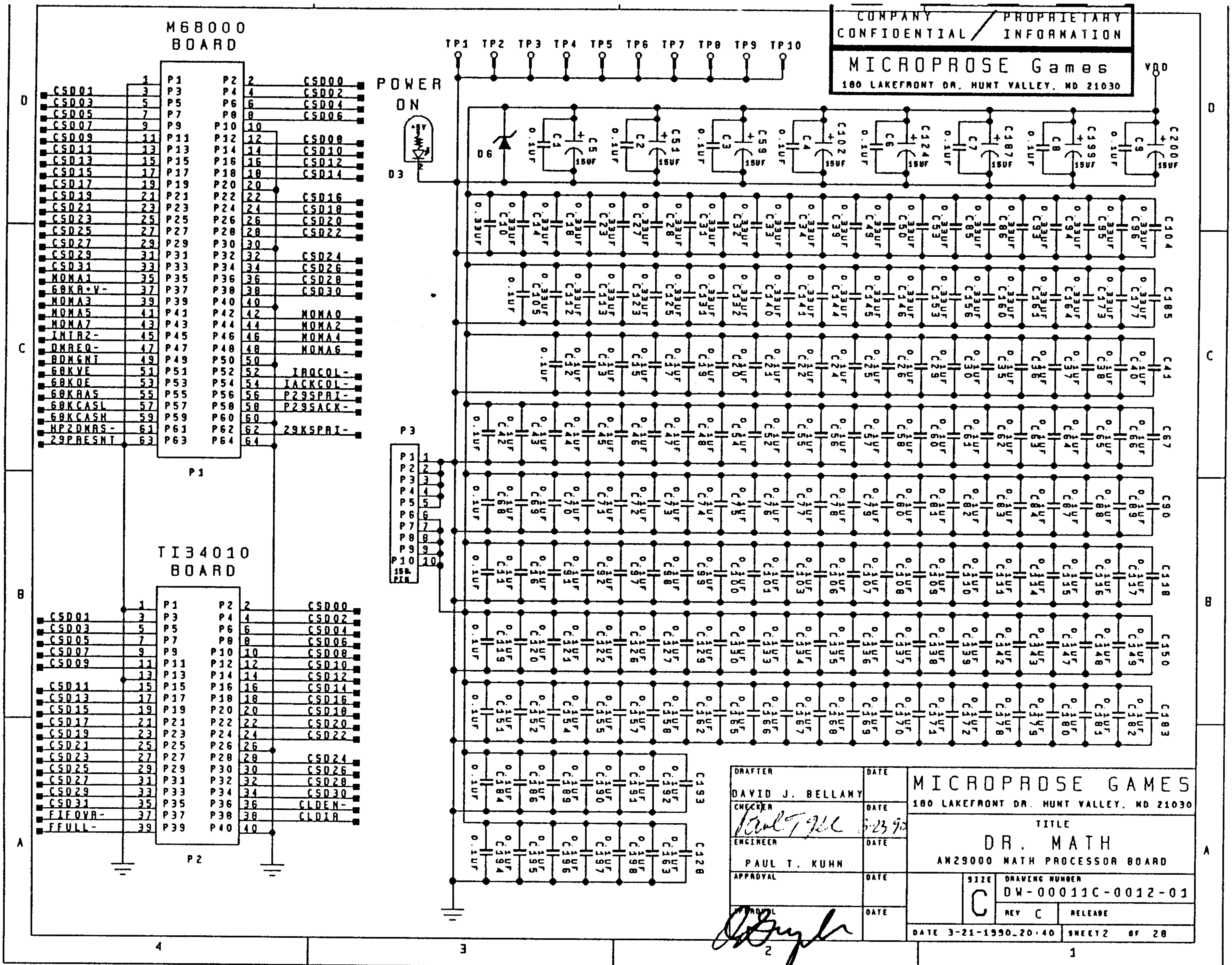
DR. MATH P.C.B. ASSEMBLY

DATE	ECN(s)	REV	SHEET NUMBER																																		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1-16-90	ECN006	A	A														A			A																	
1-22-90	ECN007	B	B							B	B												B	B						B							
		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C							
5-07-90	ECN015	D	D		D																																
6-13-90	ECN038	E	E		E																			E													
7-06-90	ECN051	F	F		F	F	F			F							F					F		F				F		F							
7-25-90	ECN055	G	G			G																															
9-15-90	ECN064	H	H								H																										
10-8-90	ECN081	K	K			K																															
10-8-90	ECN090	L	L				L																														
11-8-90	ECN137	M	M			M																		M													

COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

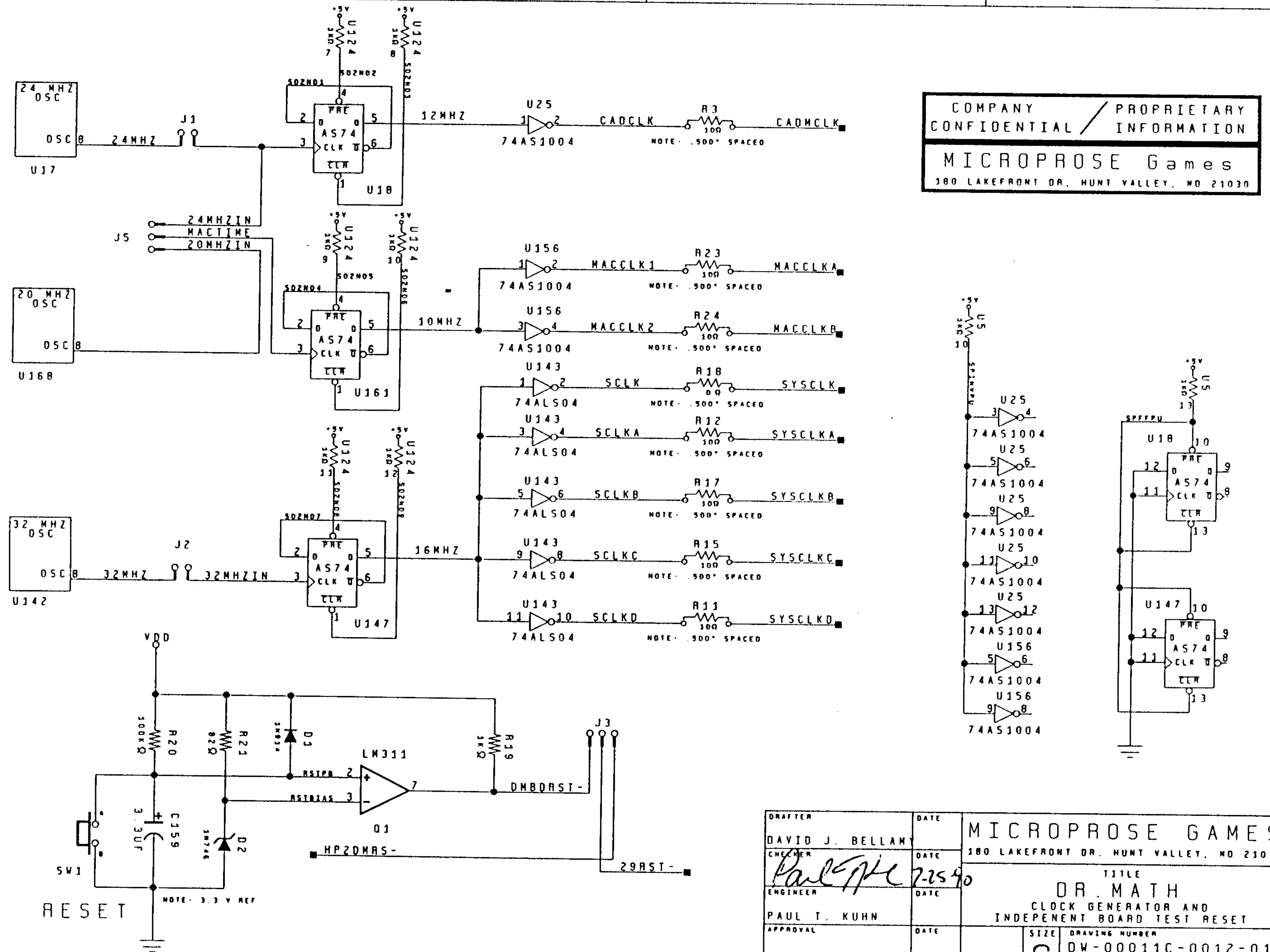
MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER: Paul T. K 11-8-90	DATE	TITLE: DR. MATH DR. MATH PCB ASSEMBLY
ENGINEER: PAUL T. KUHN	DATE	
APPROVAL	DATE	SIZE: C — DRAWING NUMBER: DW-00011C-0012-01
APPROVAL	DATE	REV M — RELEASE
		DATE 11-8-1990.10:54 — SHEET 1 OF 28

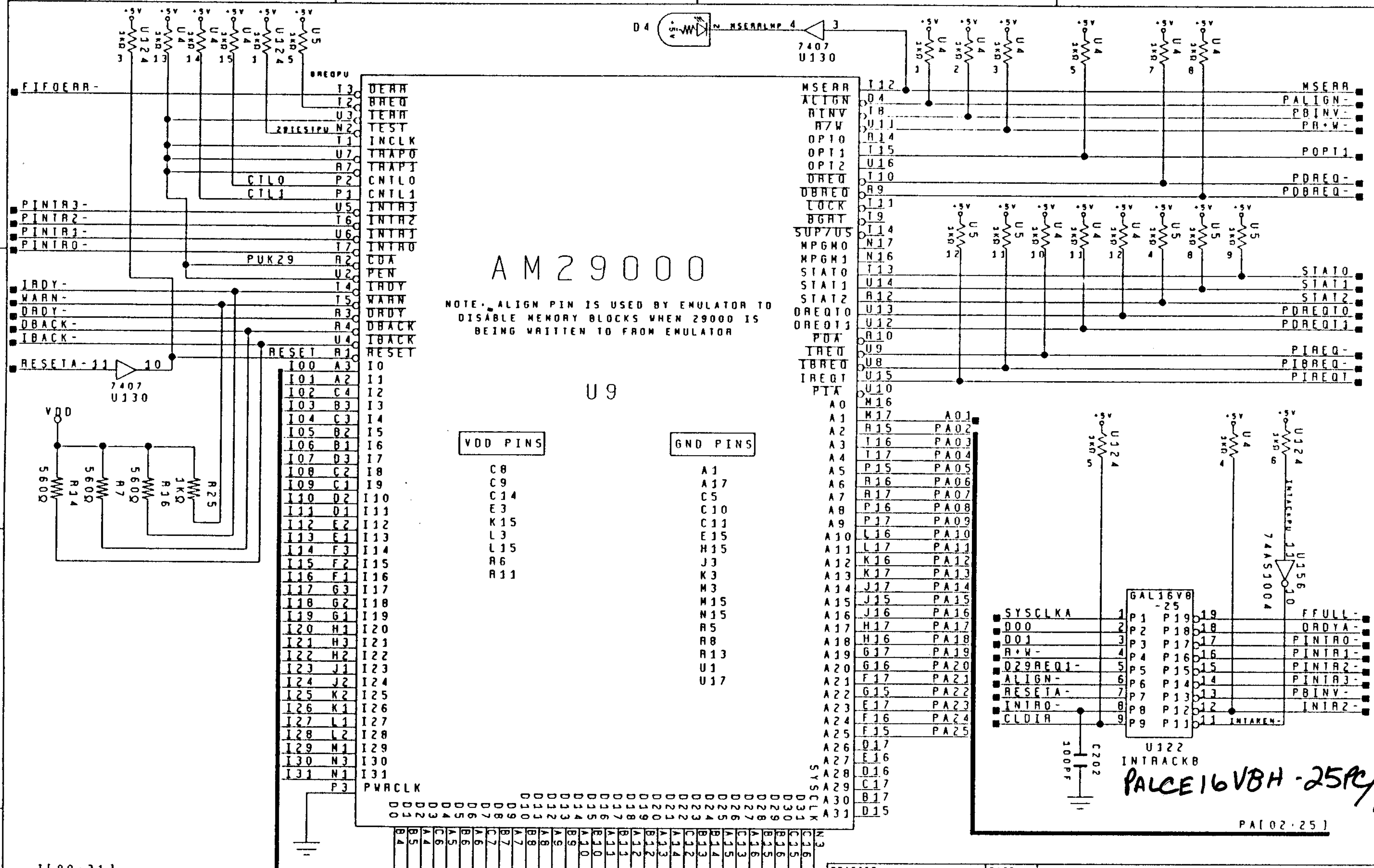

COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION
MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030
M68000 BOARD
P1
TI34010 BOARD
P2
POWER ON
D3
D6
P3
TP1 TP2 TP3 TP4 TP5 TP6 TP7 TP8 TP9 TP10
VDD
DRAFTER
DAVID J. BELLAMY
CHECKER
ENGINEER
PAUL T. KUHN
APPROVAL
DATE
MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030
TITLE
DR. MATH
AM29000 MATH PROCESSOR BOARD
SIZE C
DRAWING NUMBER
DW-00011C-0012-01
REV C
RELEASE
DATE 3-21-1990_20:40
SHEET 2 OF 28

COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030



DRAFTER	DATE	MICROPROSE GAMES
DAVID J. BELLAMY		180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER	DATE	TITLE
Paul T. Kuhn	7-25-90	DR. MATH
ENGINEER	DATE	CLOCK GENERATOR AND INDEPENENT BOARD TEST RESET
PAUL T. KUHN		
APPROVAL	DATE	SIZE C — DRAWING NUMBER DW-00011C-0012-01
APPROVAL	DATE	REV F — RELEASE
		DATE 7-10-1990_11:11 — SHEET 3 OF 28



DRAFTER: DAVID J. BELLAMY — DATE

CHECKER: [signature] — DATE: 11-7-90

ENGINEER: PAUL T. KUHN — DATE

APPROVAL — DATE

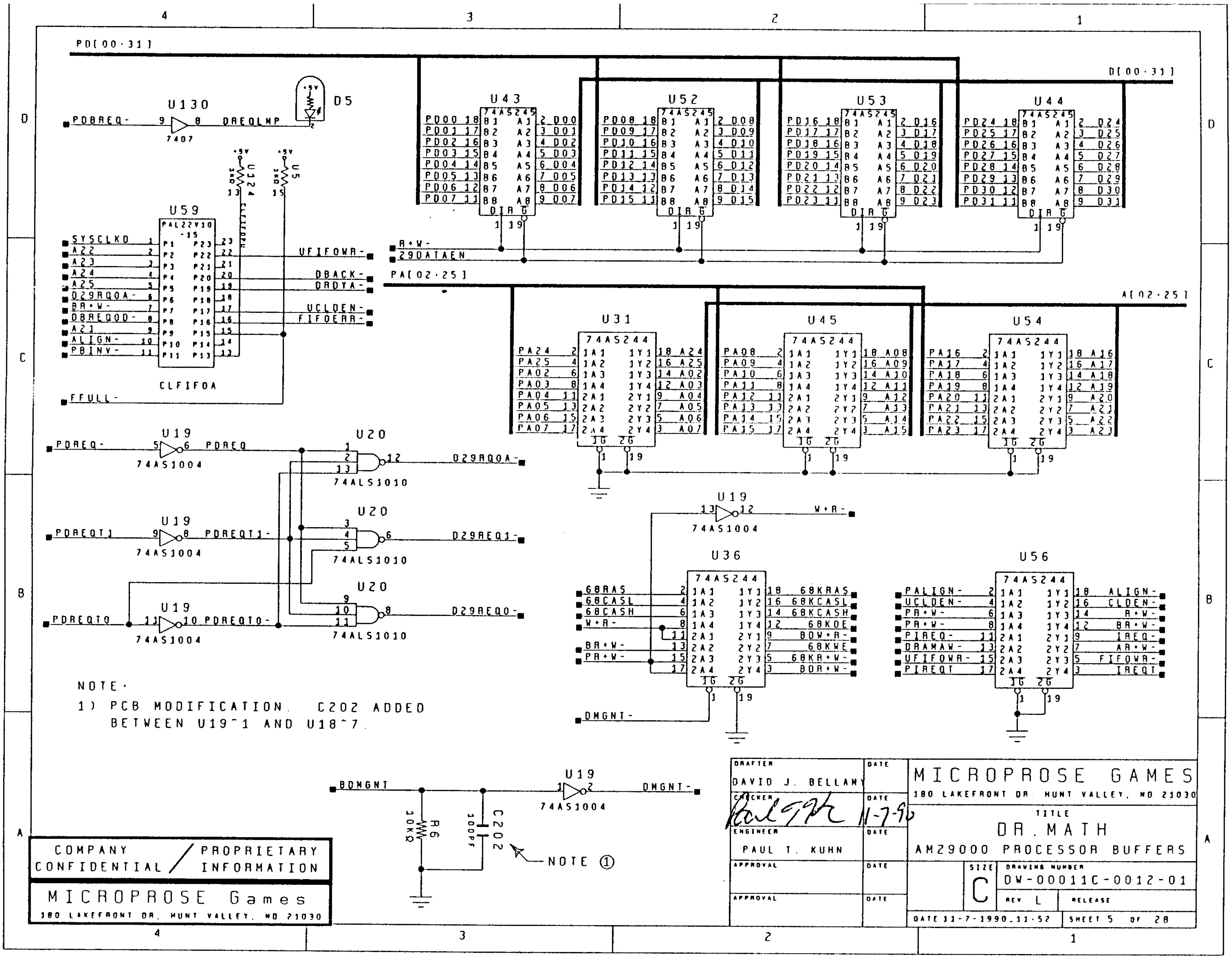
APPROVAL — DATE

MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

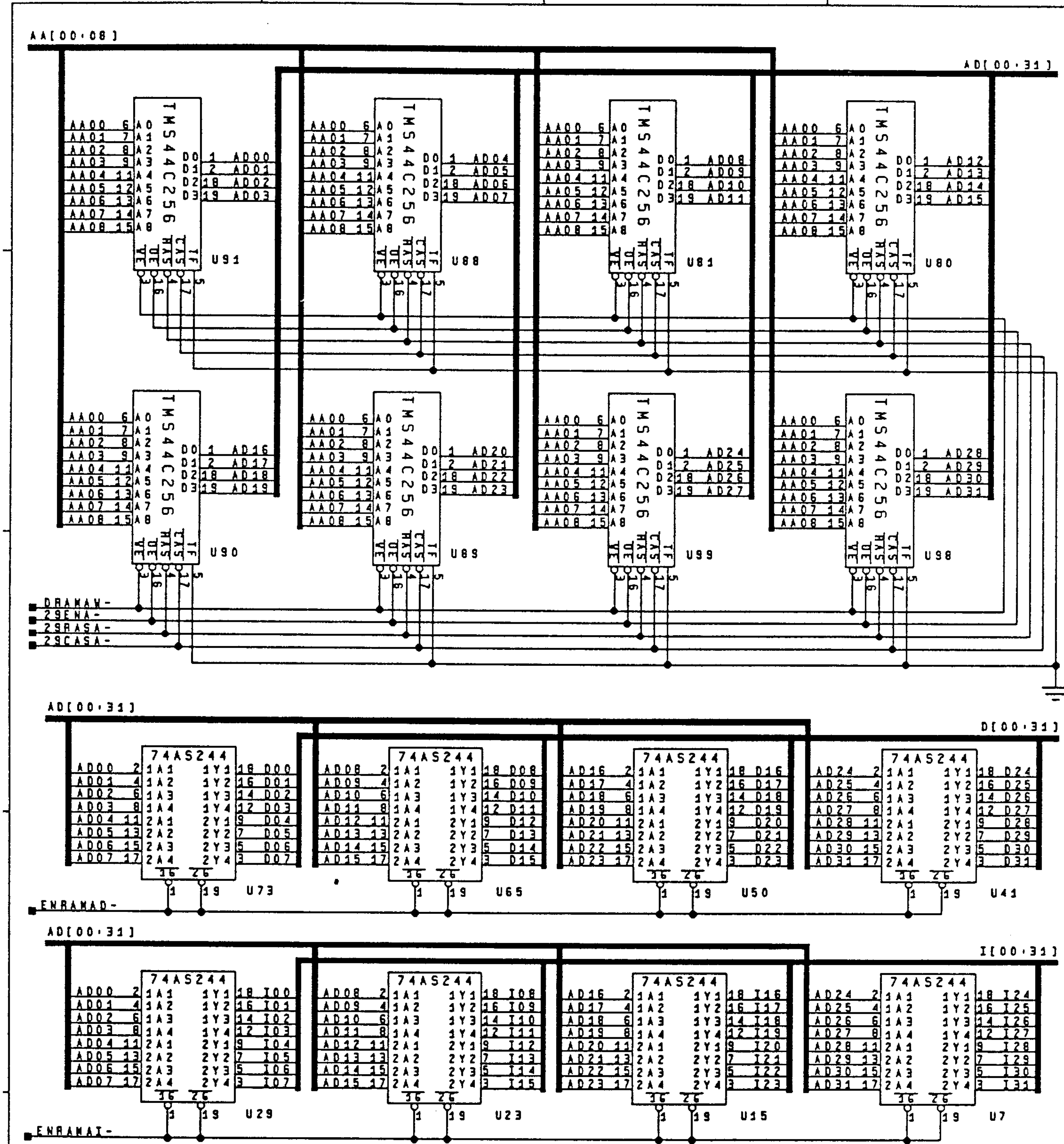
TITLE: DR. MATH
AM29000 AND REQUIRED PULLUPS

SIZE: C — DRAWING NUMBER: DW-00011C-0012-01
REV: K — RELEASE
DATE: 10-8-1990_10:30 — SHEET 4 OF 28

COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION



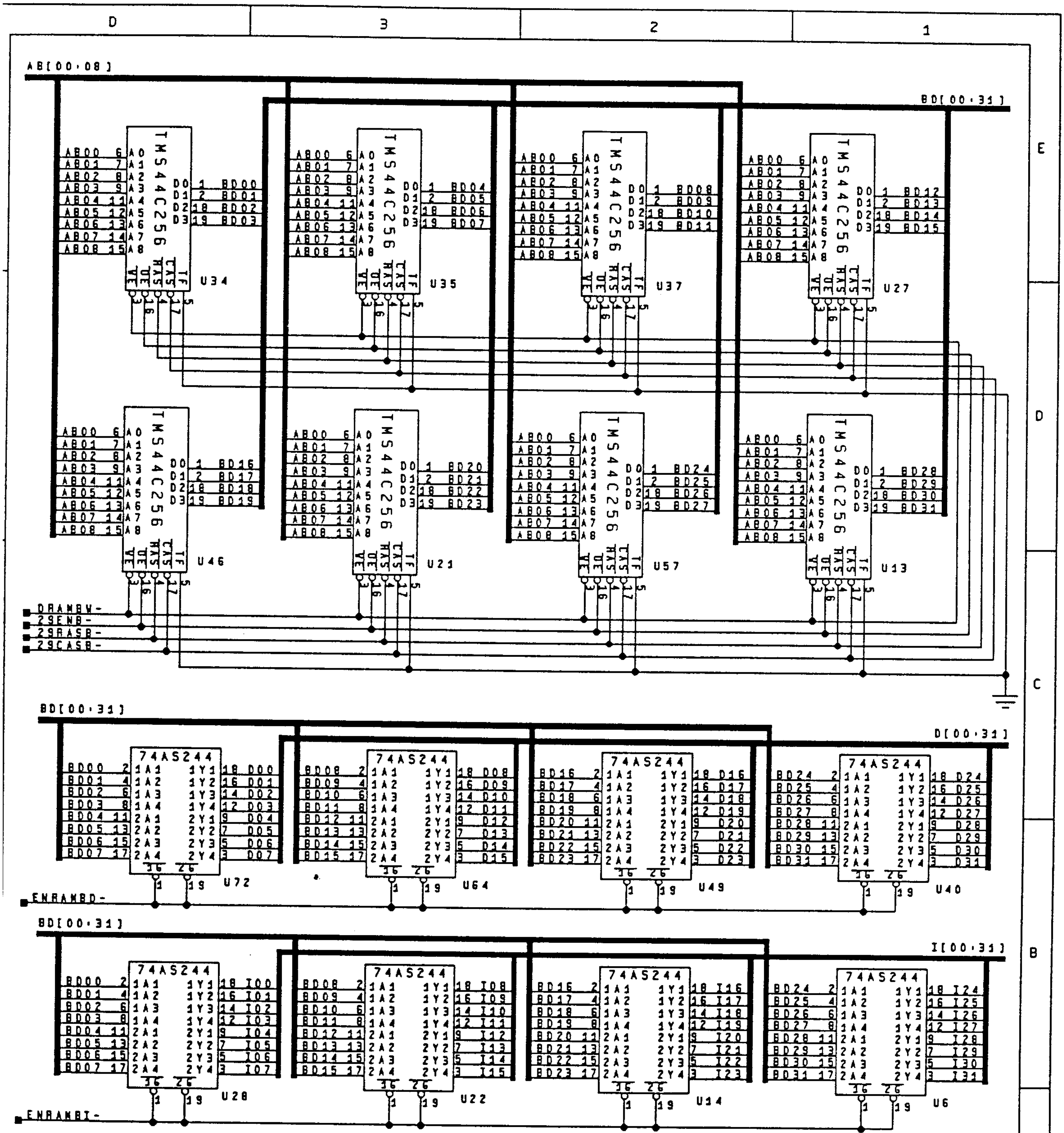
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D[00·31]
PA[02·25]
A[02·25]
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U56
74AS244
U59
PAL22V10 -15
CLFIFOA
U130
7407
D5
PDBREQ-
DREQLMP
SYSCLKD
A22
A23
A24
A25
D29RQOA-
BR+W-
DBREQOD-
A21
ALIGN-
PBINV-
FFULL-
UFIFOWR-
DBACK-
DRDYA-
UCLDEN-
FIFOERR-
R+W-
29DATAEN
U19
74AS1004
U20
74ALS1010
PDREQ-
PDREQ
D29RQOA-
PDREQT1
PDREQT1-
D29REQ1-
PDREQTO
PDREQTO-
D29REQO-
W+R-
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68CASL
68CASH
68KRAS
68KCASL
68KCASH
68KOE
BOW+R-
68KWE
68KR+W-
BDR+W-
BR+W-
PR+W-
DMGNT-
PALIGN-
UCLDEN-
PIREQ-
DRAMAW-
UFIFOWR-
PIREQT
ALIGN-
CLDEN-
IREQ-
AR+W-
FIFOWR-
IREQT
BDMGNT
R6
10KΩ
C202
100PF
NOTE ①
NOTE·
1) PCB MODIFICATION. C202 ADDED BETWEEN U19~1 AND U18~7.
COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION
MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030
DRAFTER DAVID J. BELLAMY
CHECKER
DATE 11-7-90
ENGINEER PAUL T. KUHN
APPROVAL
MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030
TITLE DR.MATH
AM29000 PROCESSOR BUFFERS
SIZE C
DRAWING NUMBER DW-00011C-0012-01
REV L
RELEASE
DATE 11-7-1990.11:52
SHEET 5 OF 28



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER: Paul T. Kuhn	DATE: 3-23-90	TITLE: DR. MATH
ENGINEER: PAUL T. KUHN	DATE	'A' BANK - 256K X 32 DRAM ARRAY
APPROVAL	DATE	SIZE: C — DRAWING NUMBER: DW-00011C-0012-01
APPROVAL	DATE	REV: C — RELEASE
		DATE 3-21-1990_0:45 — SHEET 6 OF 28



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

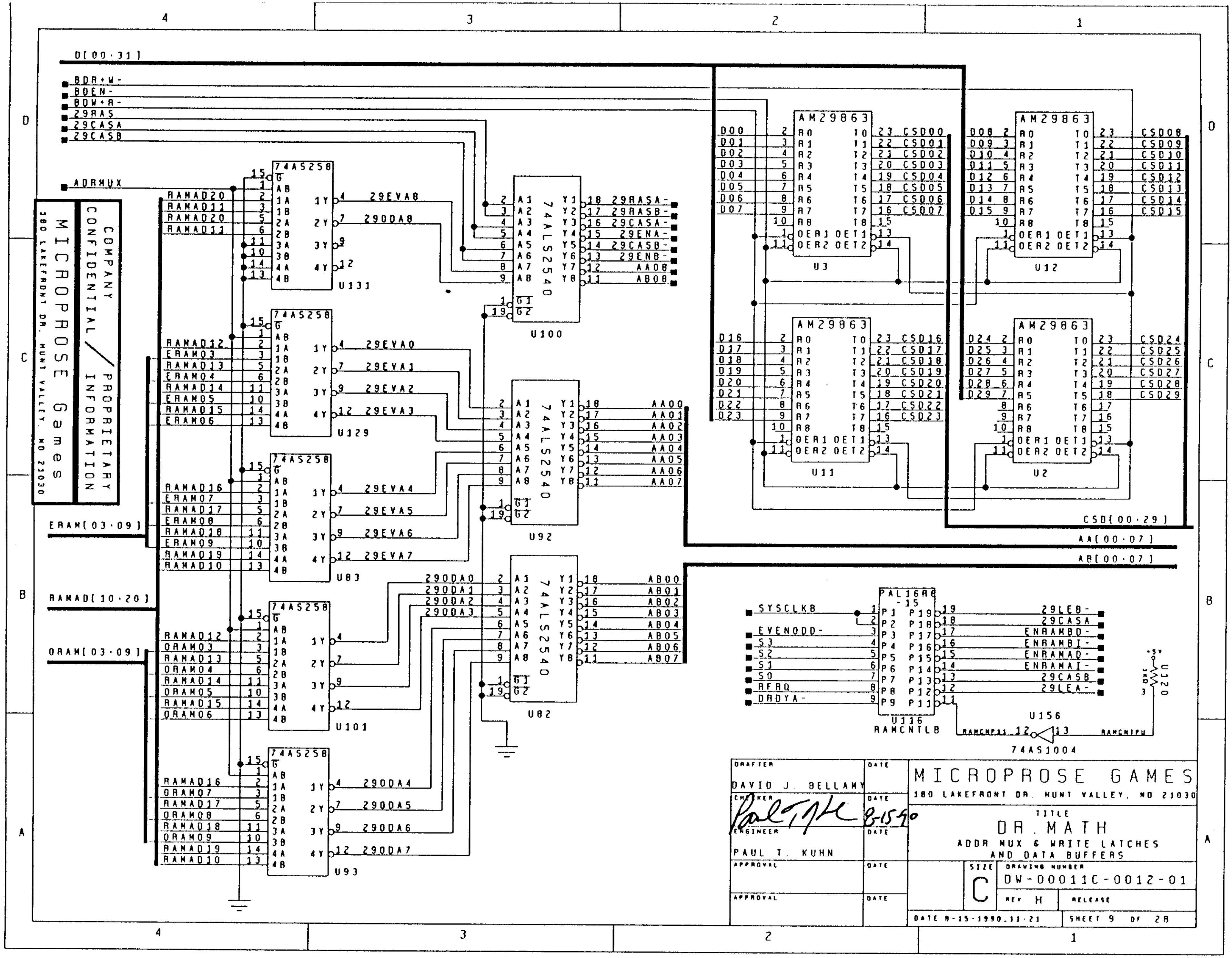
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ENGINEER: PAUL T. KUHN	DATE
APPROVAL: [signature]	DATE

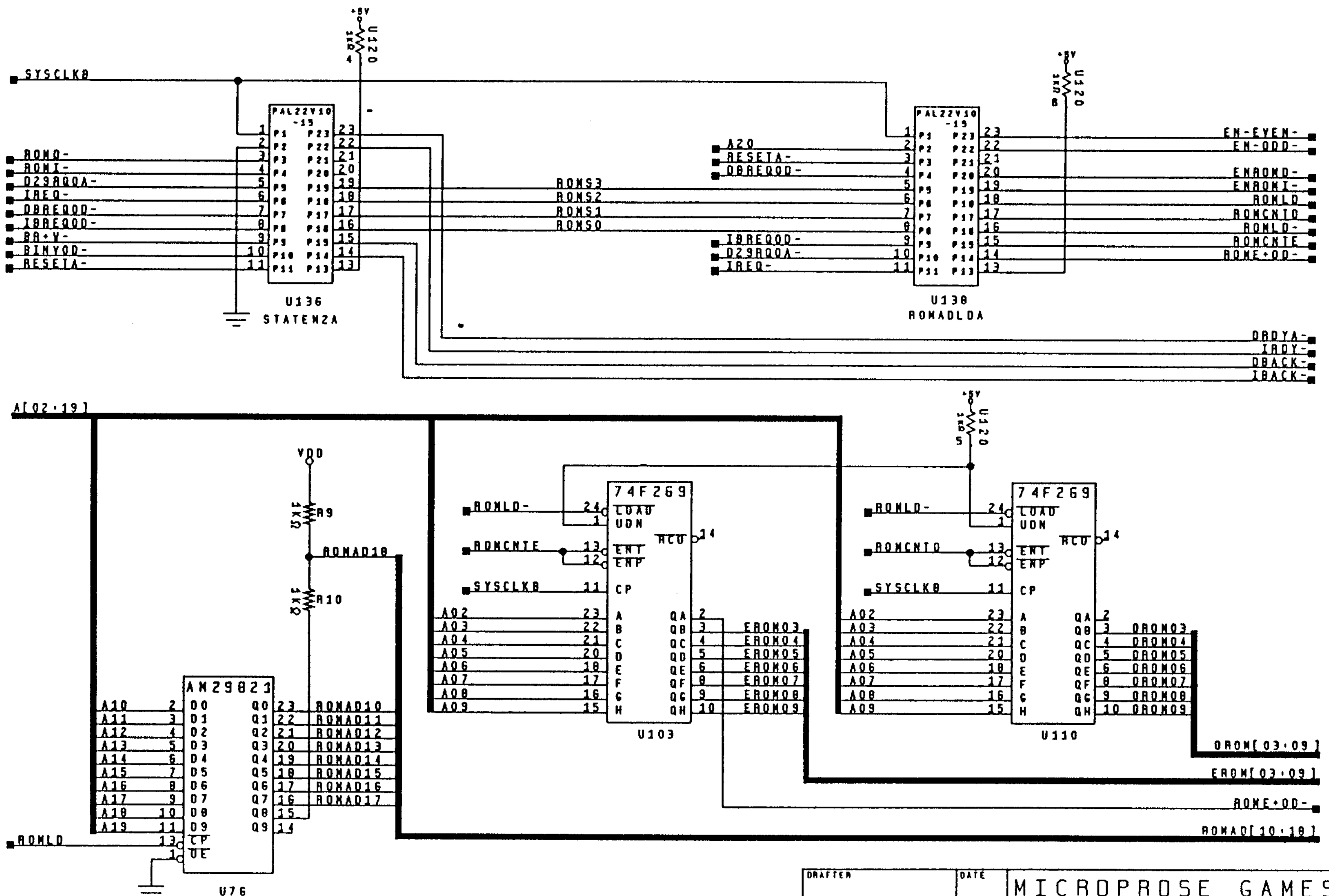
MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

TITLE: DR. MATH
'B' BANK - 256K X 32 DRAM ARRAY

SIZE: C | DRAWING NUMBER: DW-00011C-0012-01 | REV C | RELEASE

DATE 3-21-1990_0:47 | SHEET 7 OF 28

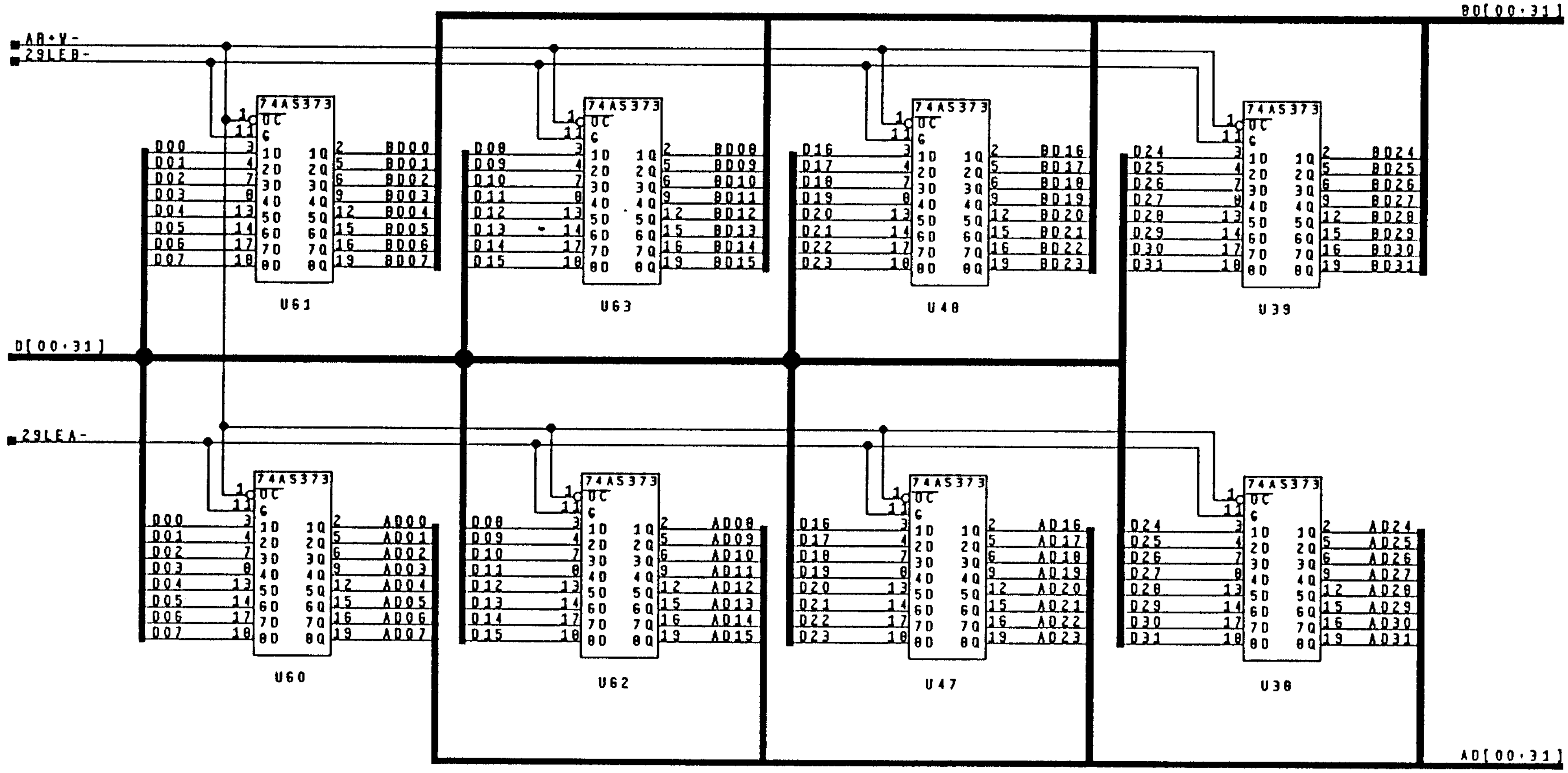

COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION
MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030
MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030
DRAFTER
DAVID J. BELLAMY
CHECKER
ENGINEER
PAUL T. KUHN
APPROVAL
APPROVAL
DATE
TITLE
DR. MATH
ADDR MUX & WRITE LATCHES
AND DATA BUFFERS
SIZE
C
DRAWING NUMBER
DW-00011C-0012-01
REV H
RELEASE
DATE 8-15-1990 11:21
SHEET 9 OF 28



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

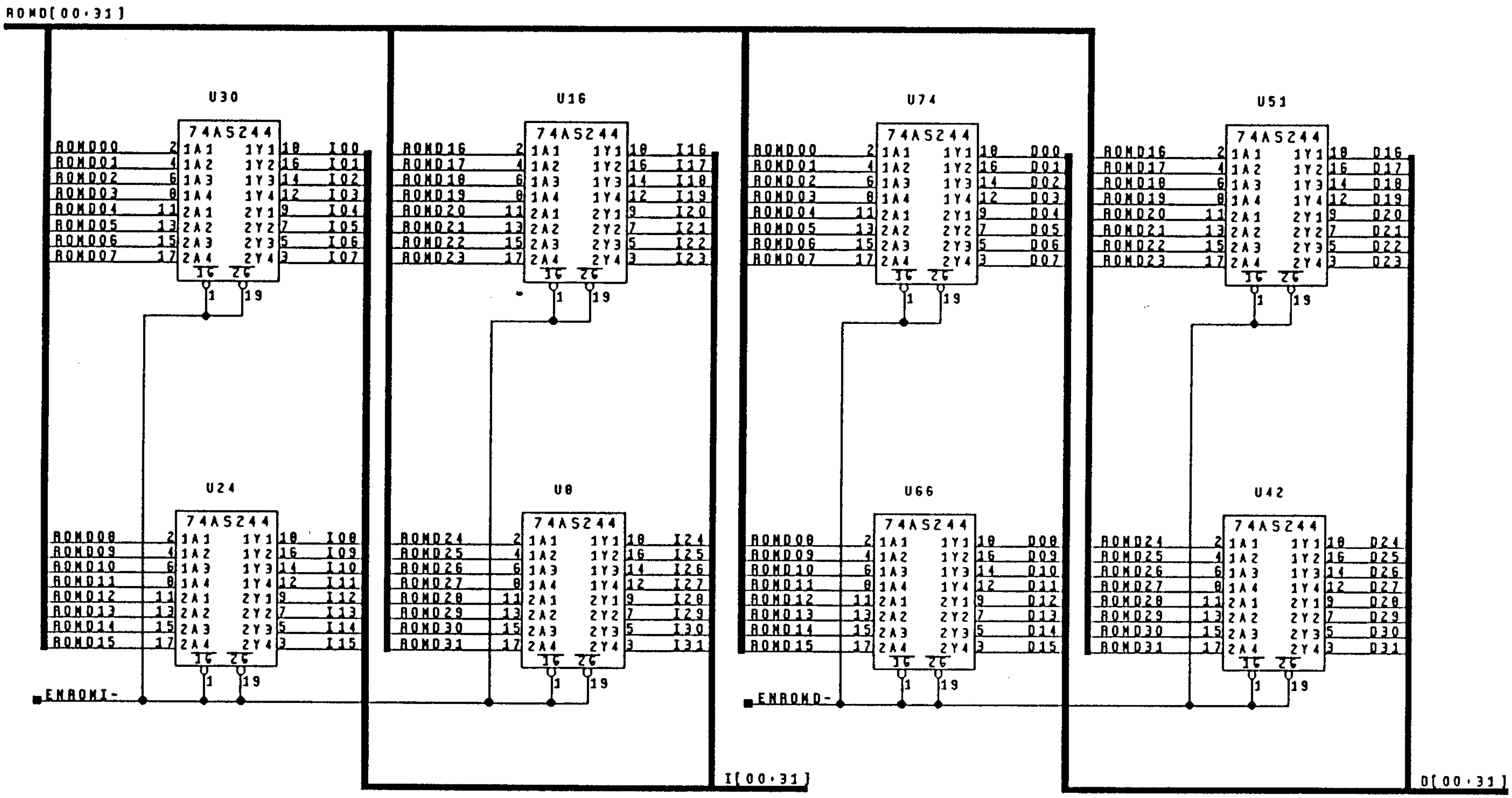
DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER: Paul T. Kuhn	DATE: 3-23-90	TITLE DR.MATH ROM MEMORY CONTROLLER
ENGINEER: PAUL T. KUHN	DATE	
APPROVAL	DATE	SIZE: C — DRAWING NUMBER: DW-00011C-0012-01
APPROVAL	DATE	REV C — RELEASE
		DATE 3-21-1990_1:36 — SHEET 10 OF 28



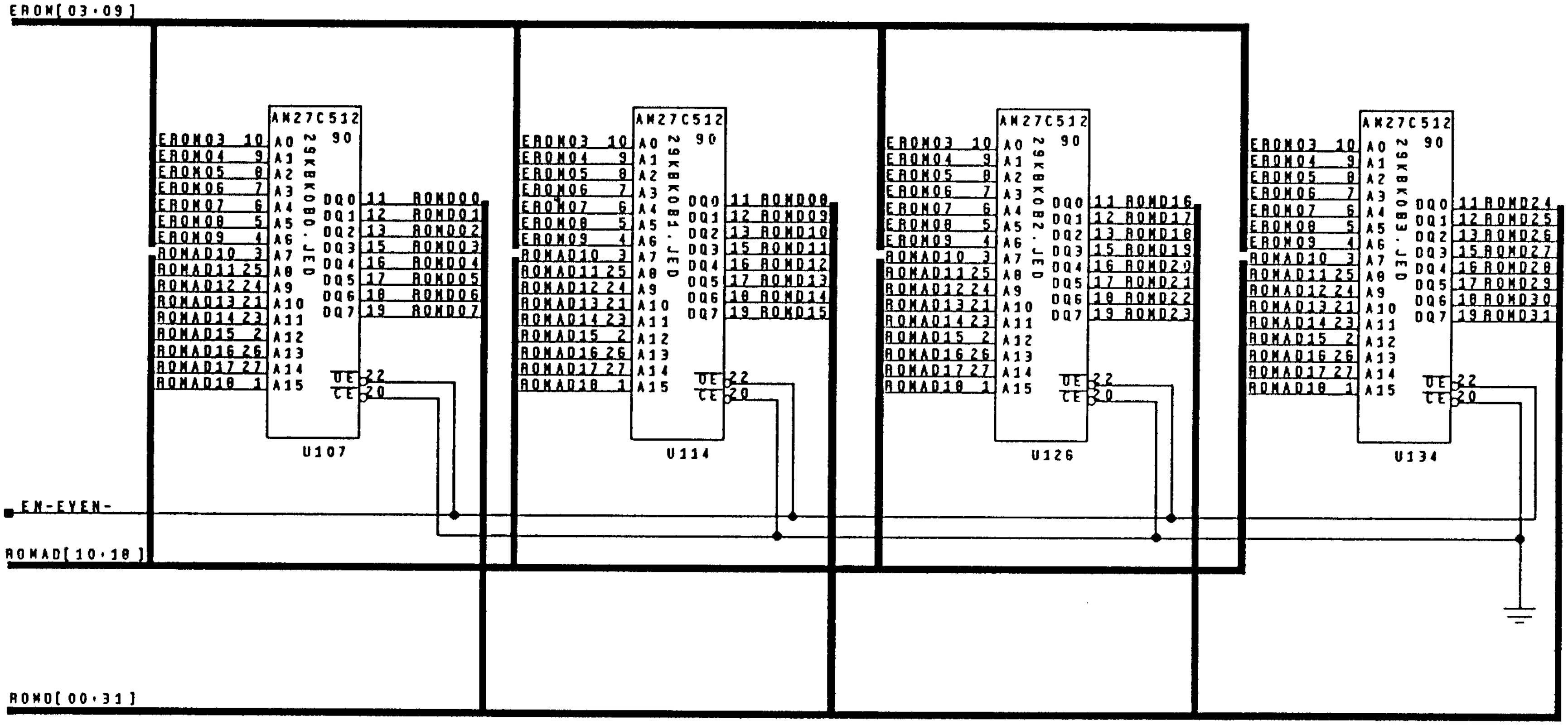
COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR, HUNT VALLEY, MD 21030

DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER	DATE 3-23-90	TITLE: DR. MATH	
ENGINEER: PAUL T. KUHN	DATE	RAM BANK DATA WRITE LATCHES	
APPROVAL	DATE	SIZE: C	DRAWING NUMBER: DW-00011C-0012-01
APPROVAL	DATE	REV: C	RELEASE
		DATE 3-21-1990_1:37	SHEET 11 OF 28



DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER: Paul T. Kuhn	DATE: 3-23-90	TITLE: 29K
ENGINEER: PAUL T. KUHN	DATE	29K INSTRUCTION ODD ARRAY
APPROVAL	DATE	SIZE: C — DRAWING NUMBER: DW-00011C-0012-01 — REV: C — RELEASE
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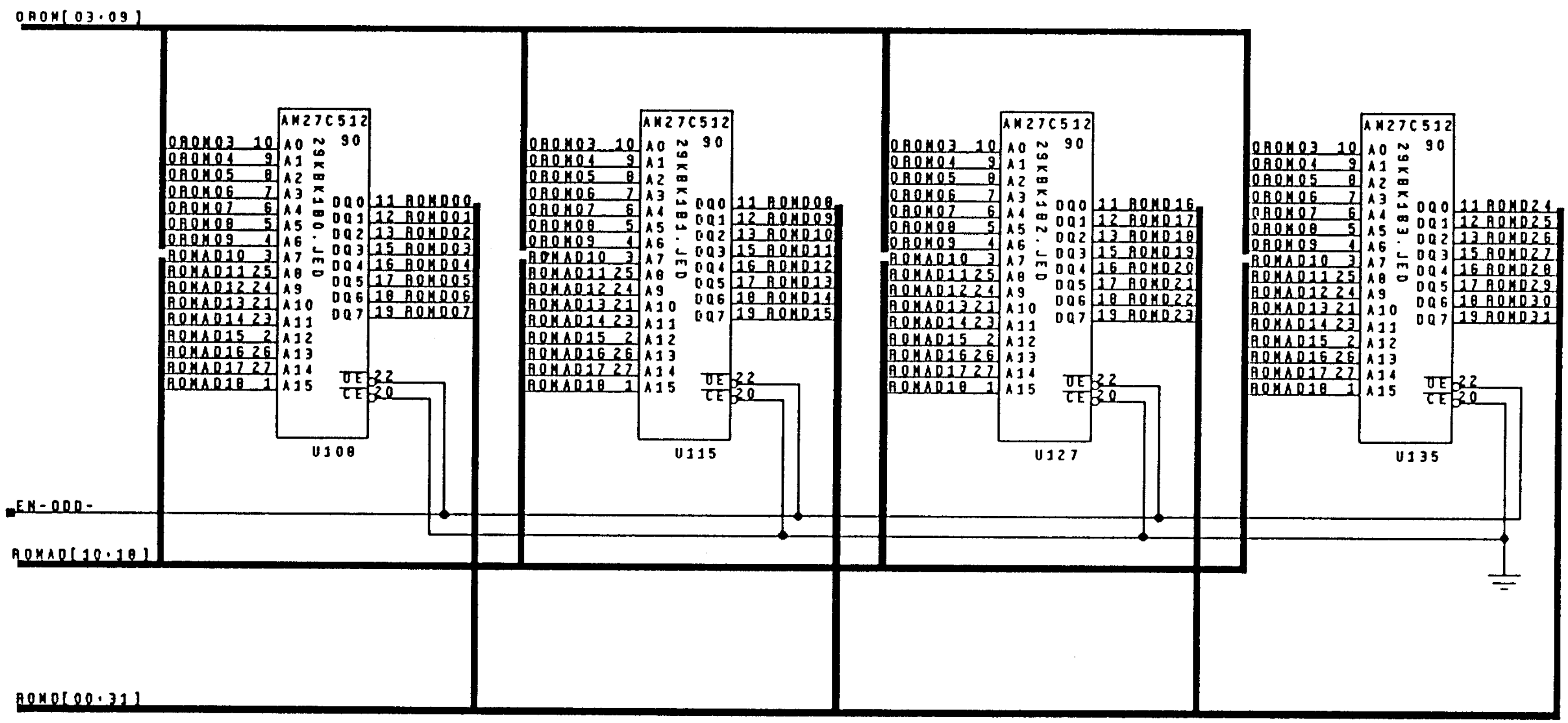


DRAFTER	DAVID J. BELLAMY
CHECKER	(signature) DATE 3-23-90
ENGINEER	PAUL T. KUHN
APPROVAL	
APPROVAL	(signature)

MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

TITLE
DR. MATH
EVEN INSTRUCTION EPROM

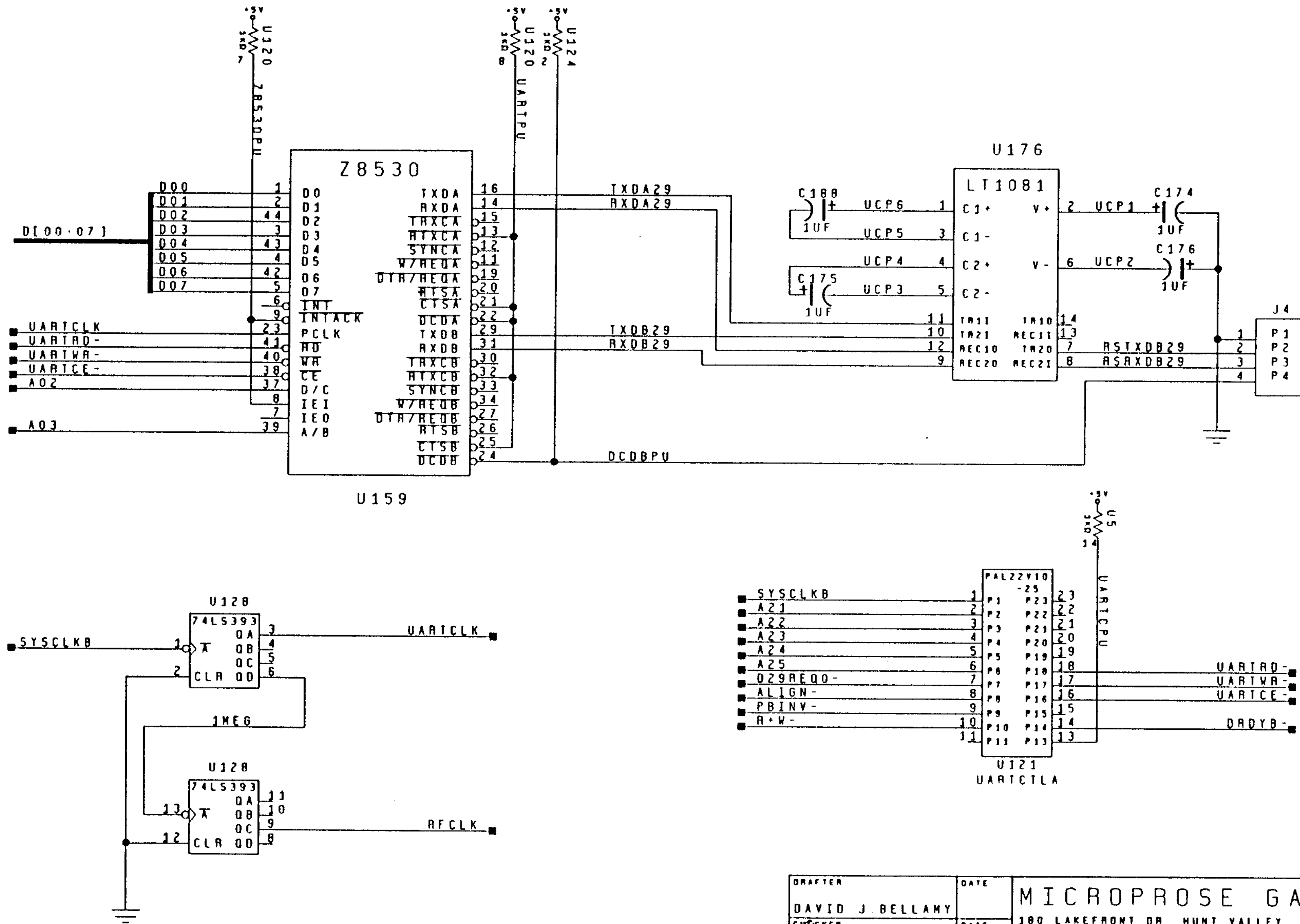
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REV C
RELEASE
DATE 3-21-1990_1:39
SHEET 13 OF 28



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

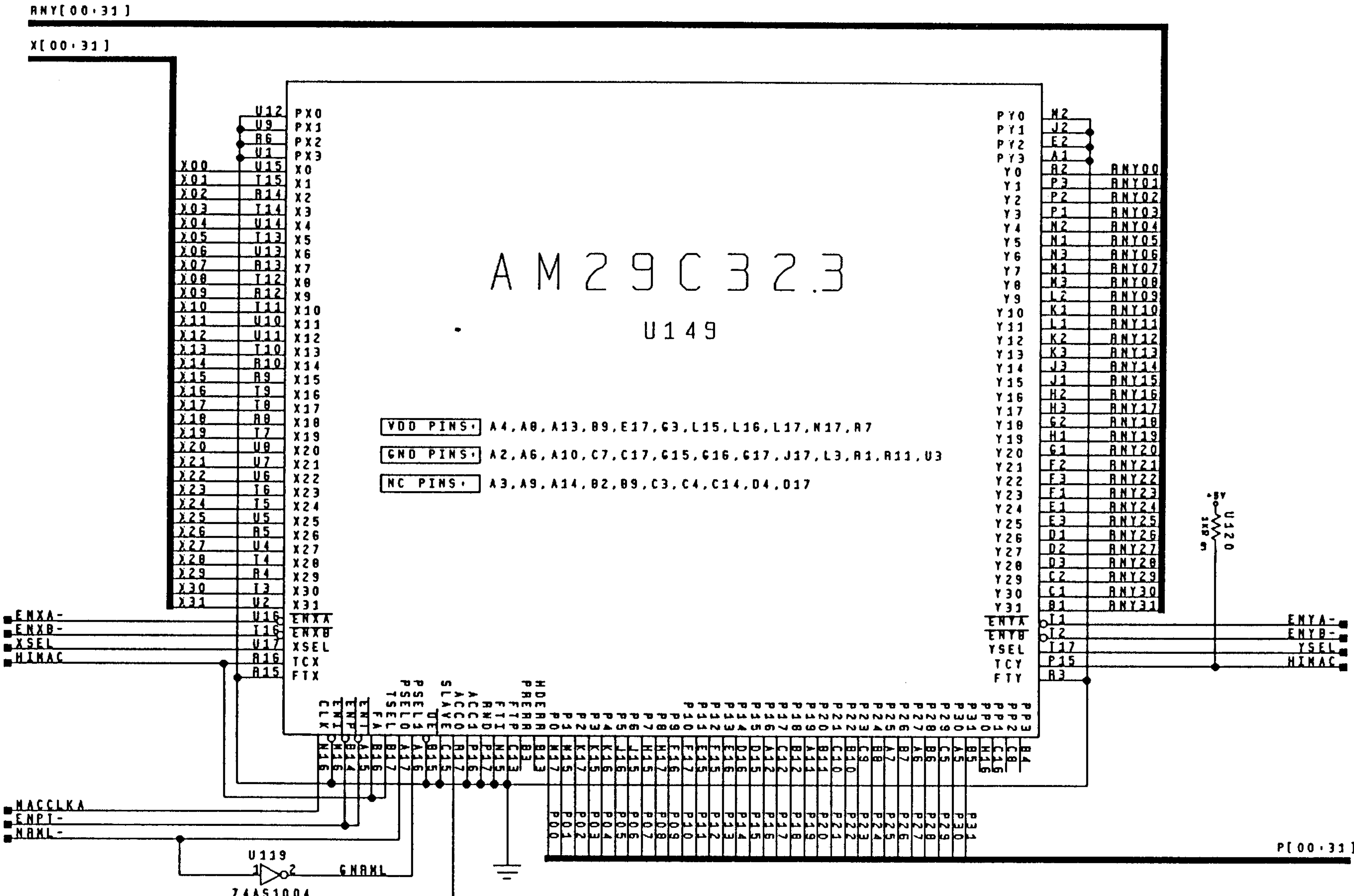
DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER: Paul T Kuhn (signature)	DATE: 3-23-90	TITLE: DR. MATH ODD INSTRUCTION EPROM
ENGINEER: PAUL T. KUHN	DATE	
APPROVAL	DATE	SIZE: C — DRAWING NUMBER: DW-00011C-0012-01
APPROVAL (signature)	DATE	REV: C — RELEASE
		DATE 3-21-1990_1:39 — SHEET 14 OF 28



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER: Paul T. Kuhn	DATE: 7-25-90	TITLE: DR. MATH AM29000 UART	
ENGINEER: PAUL T. KUHN	DATE		
APPROVAL	DATE	SIZE: C	DRAWING NUMBER: DW-00011C-0012-01
APPROVAL	DATE	REV: F	RELEASE
		DATE 7-6-1990_9:53	SHEET 15 OF 28



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

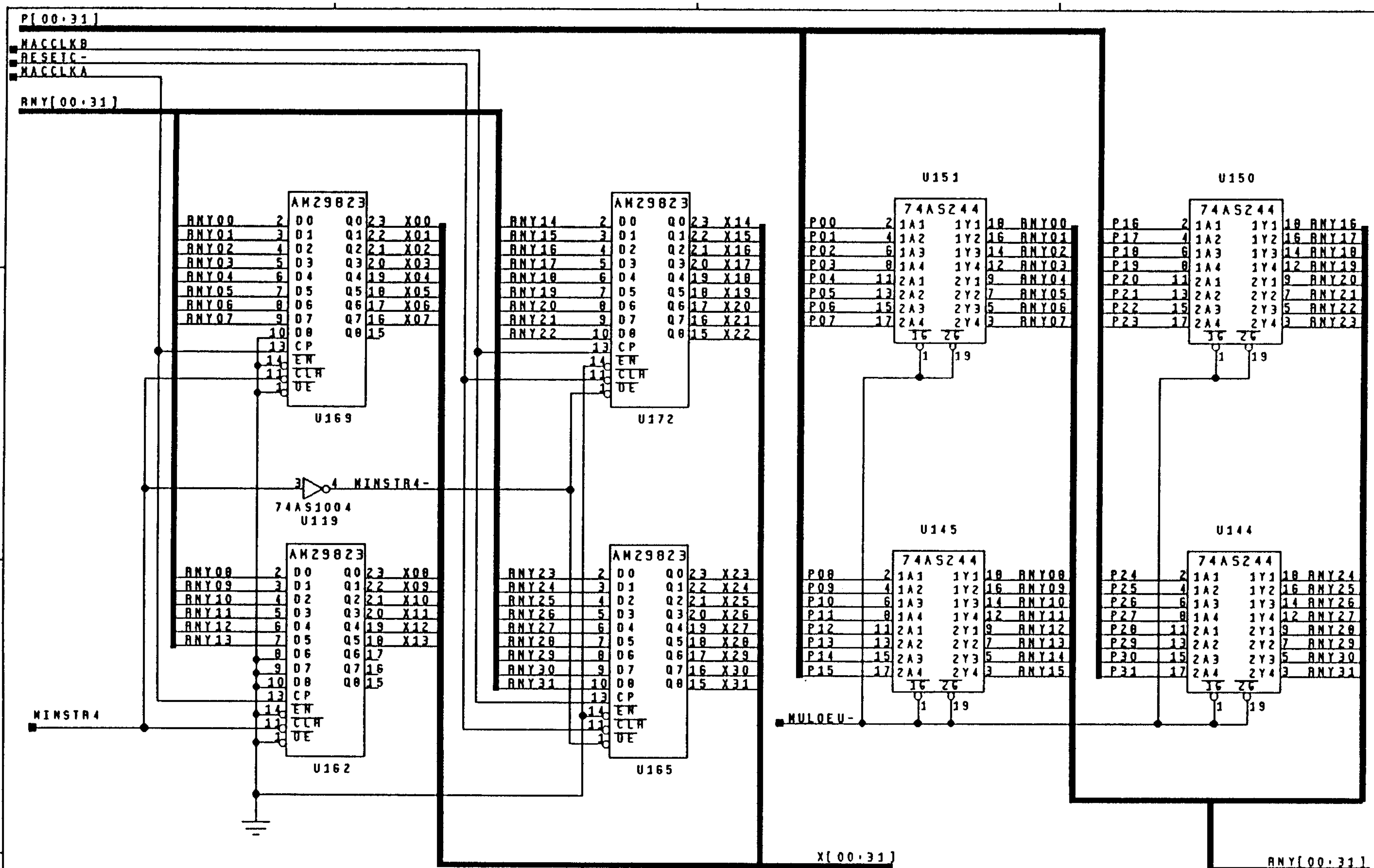
MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER: DAVID J.BELLAMY	DATE
CHECKER: [signature]	DATE: 3-23-90
ENGINEER: PAUL T. KUHN	DATE
APPROVAL	DATE
APPROVAL: [signature]	DATE

MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

TITLE: DR. MATH
MULTIPLY ACCUMULATOR

SIZE: C | DRAWING NUMBER: DW-00011C-0012-01
REV: C | RELEASE
DATE 3-21-1990_1:40 | SHEET 16 OF 28



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

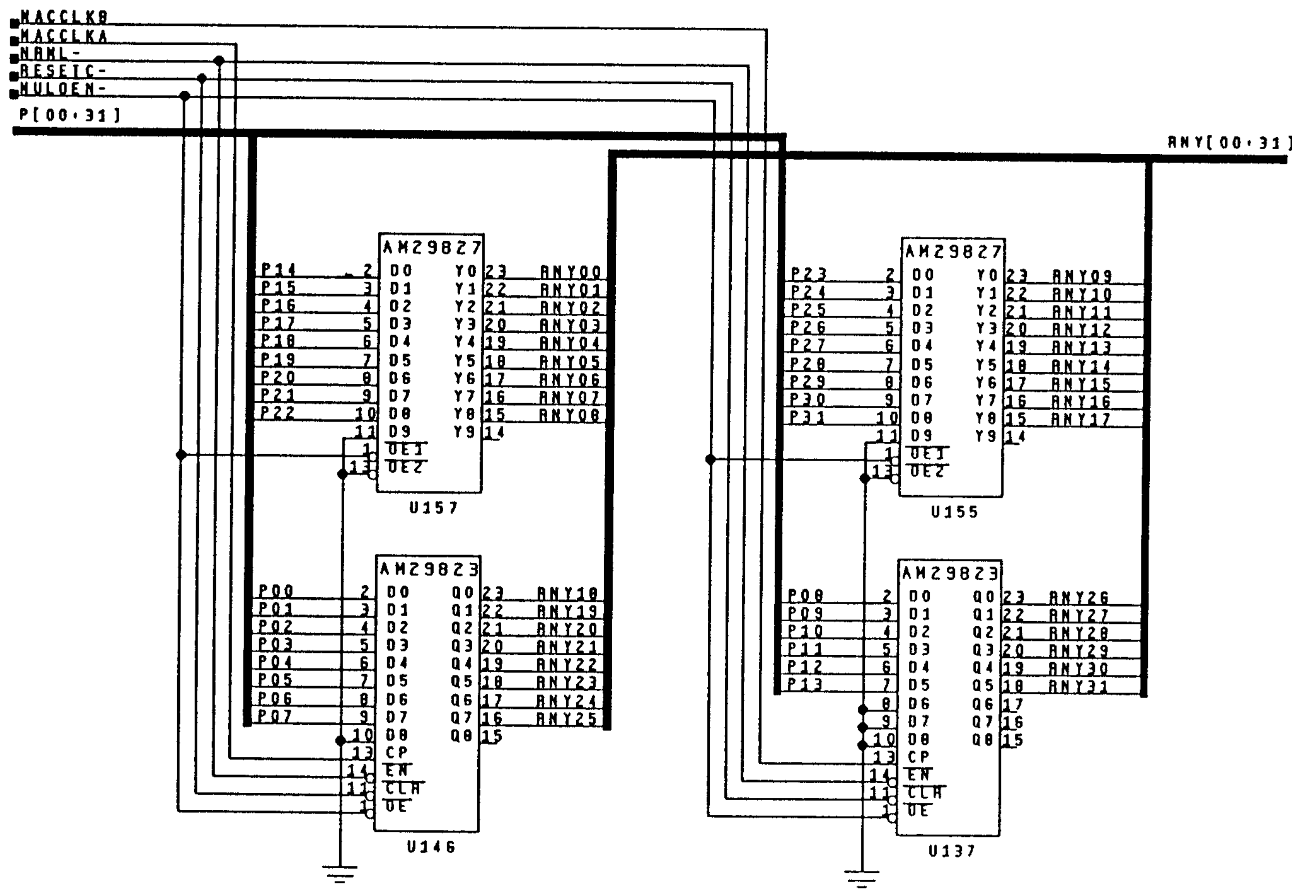
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CHECKER: [signature] 3-23-90	DATE
ENGINEER: PAUL T. KUHN	DATE
APPROVAL	DATE
APPROVAL [signature]	DATE

MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

TITLE
DR. MATH
MAC AND SRAM BUFFERS

SIZE	DRAWING NUMBER
C	DW-00011C-0012-01
	REV C — RELEASE

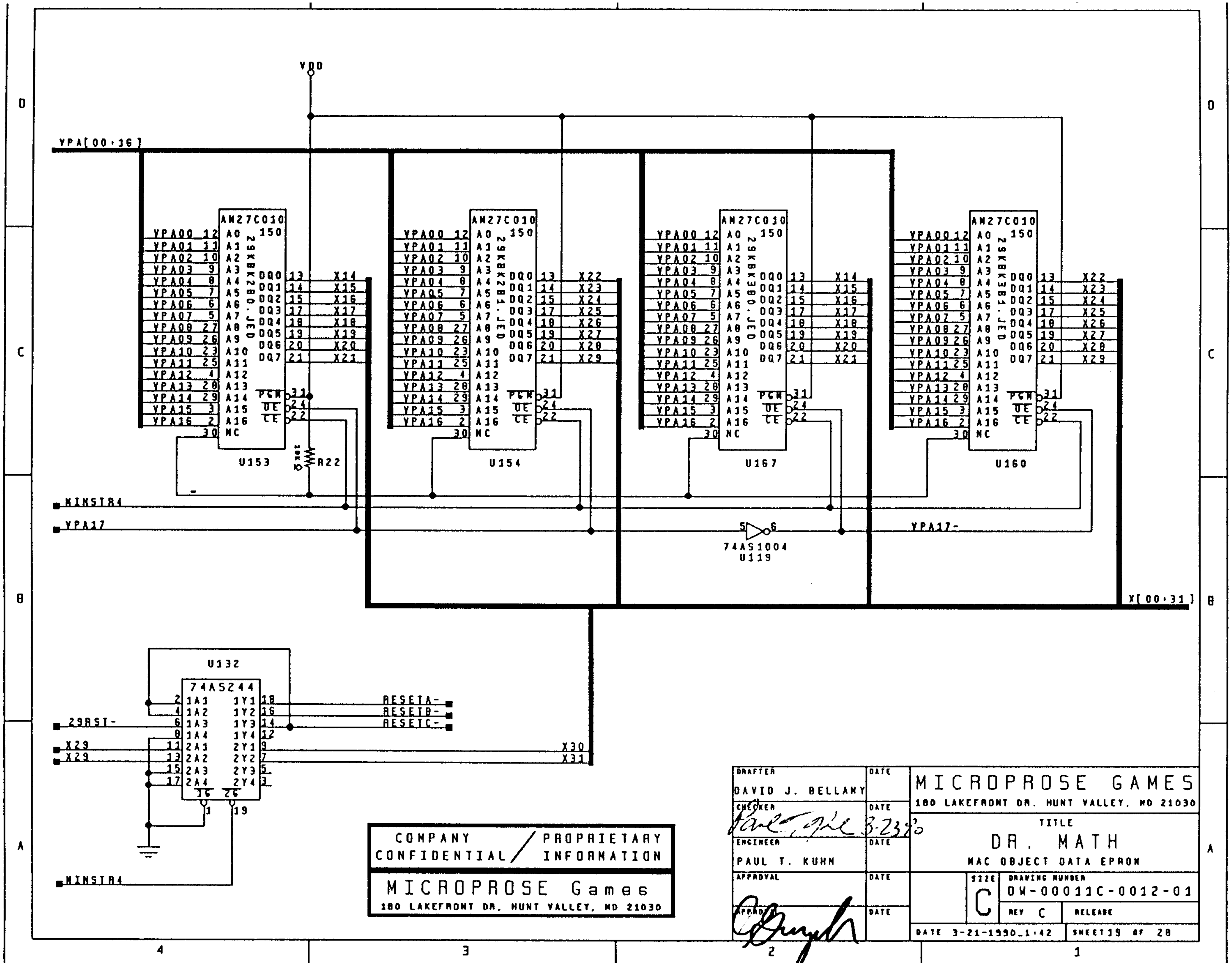
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COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

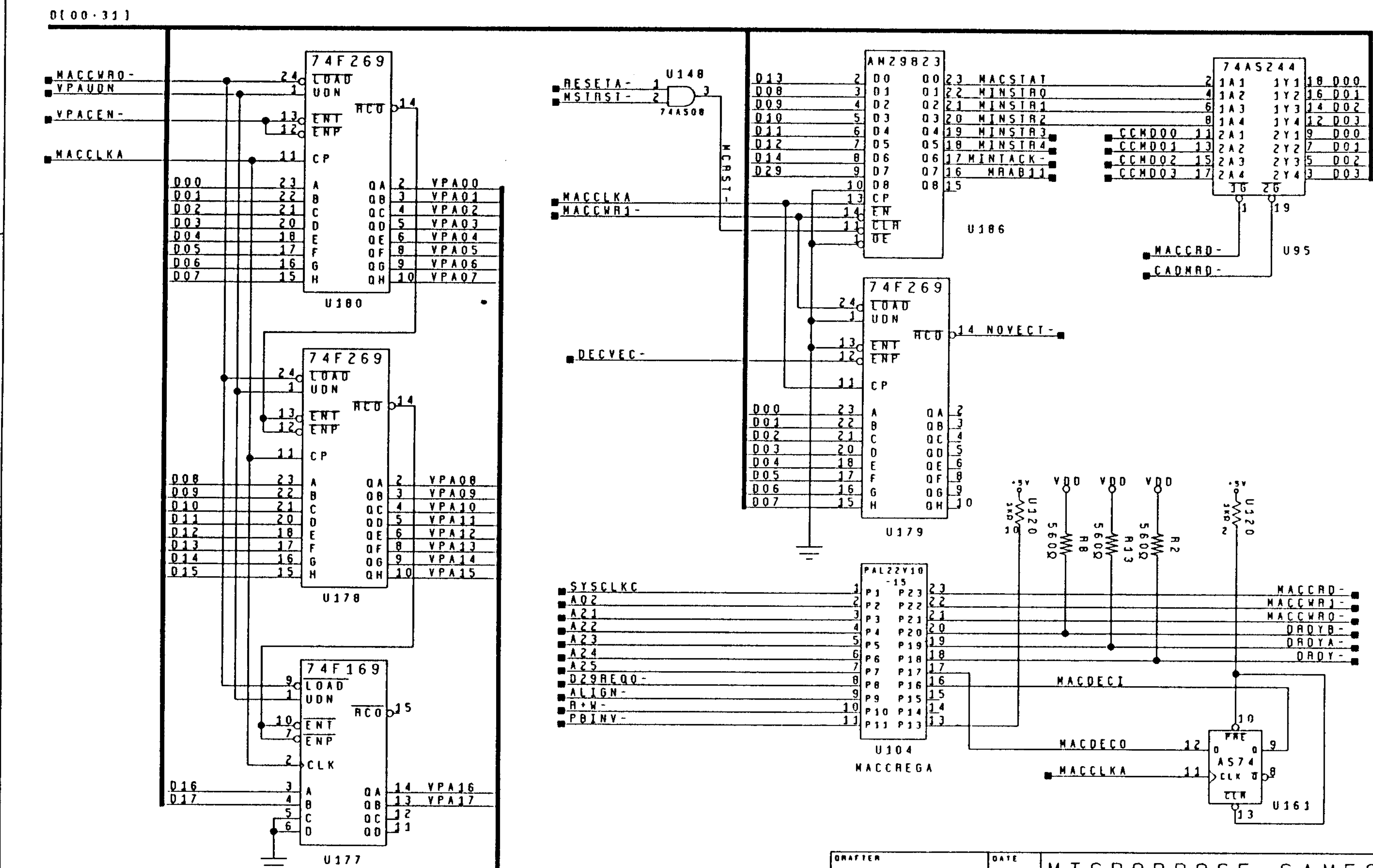
DRAFTER DAVID J.BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER (signature)	DATE 3.23.90	TITLE DR. MATH DOT PRODUCT NORMALIZATION	
ENGINEER PAUL T. KUHN	DATE		
APPROVAL	DATE	SIZE C	DRAWING NUMBER DW-00011C-0012-01
APPROVAL (signature)	DATE	REV C	RELEASE
		DATE 3-21-1990_20:37	SHEET 18 OF 28



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER: [signature]	DATE: 3-23-90	TITLE: DR. MATH MAC OBJECT DATA EPROM
ENGINEER: PAUL T. KUHN	DATE	
APPROVAL: [signature]	DATE	SIZE: C — DRAWING NUMBER: DW-00011C-0012-01
APPROVAL	DATE	REV: C — RELEASE
		DATE 3-21-1990_1:42 — SHEET 19 OF 28



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

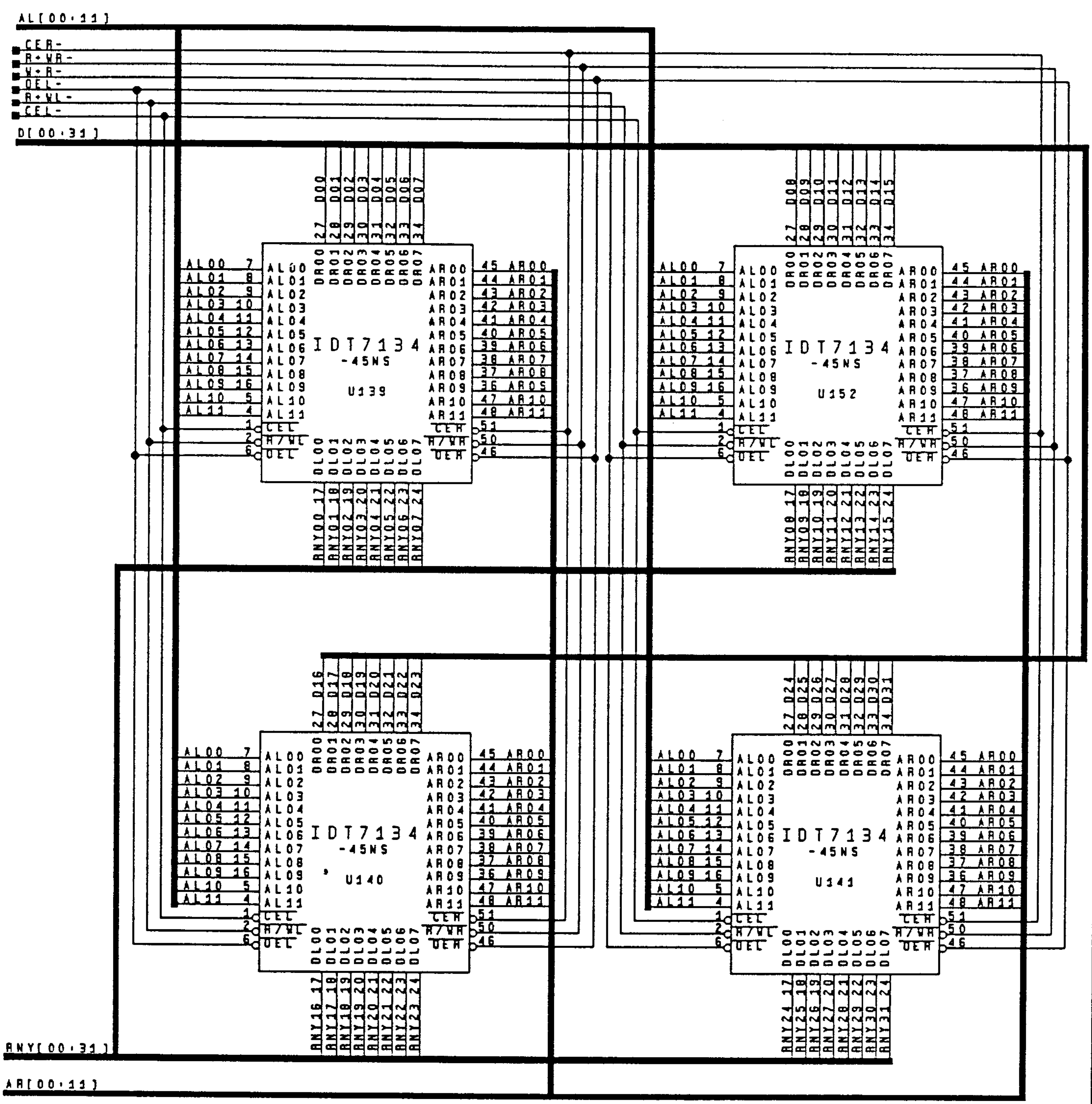
MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER: DAVID J BELLAMY	DATE
CHECKER: Paul T Kuhn	DATE: 7-25-90
ENGINEER: PAUL T. KUHN	DATE
APPROVAL	DATE
APPROVAL	DATE

MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

TITLE
DR. MATH
VERTEX POOL ADDRESS AND CONTROL REG

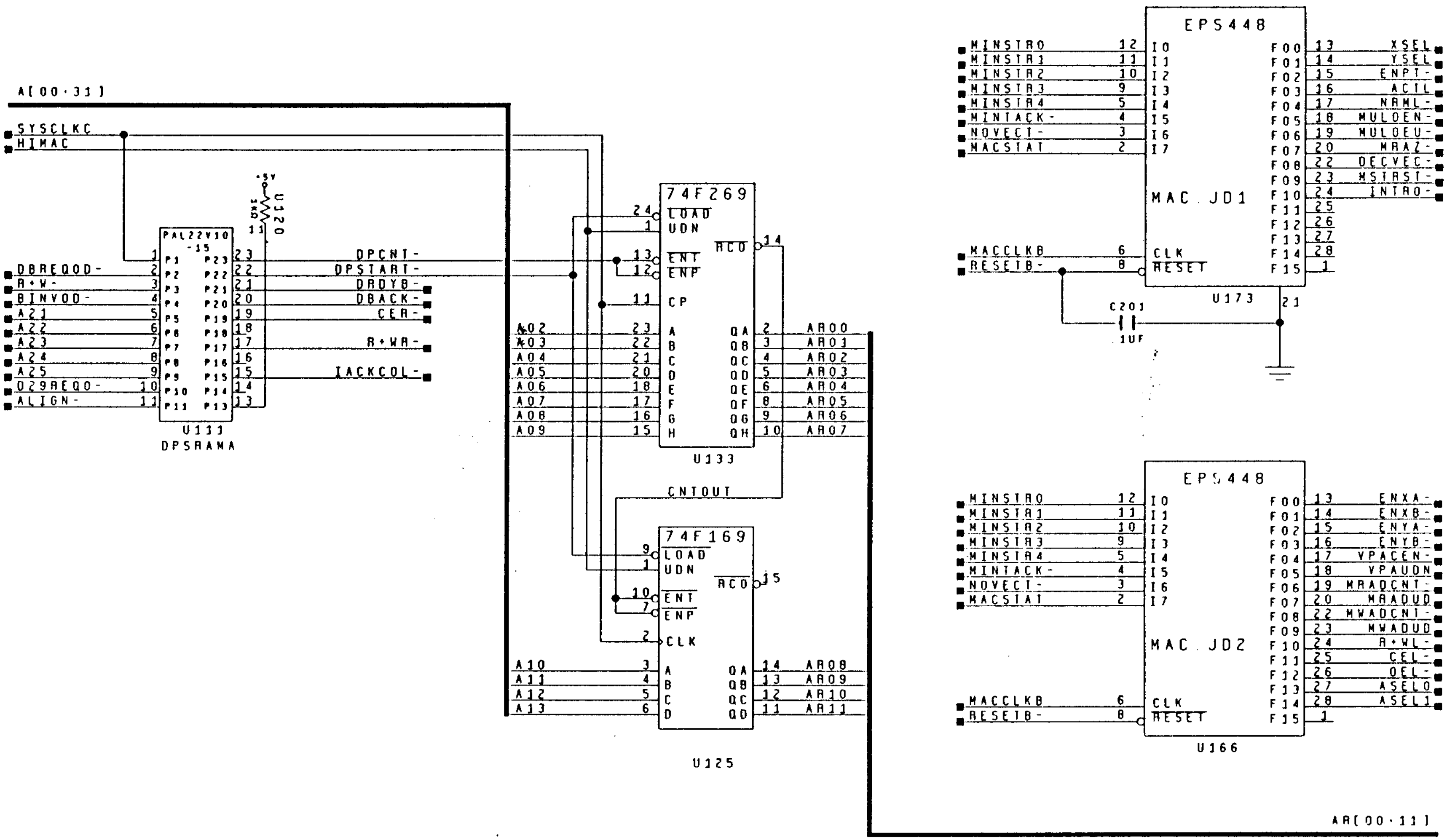
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RELEASE
DATE 7-6-1990_10:31
SHEET 20 OF 28



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

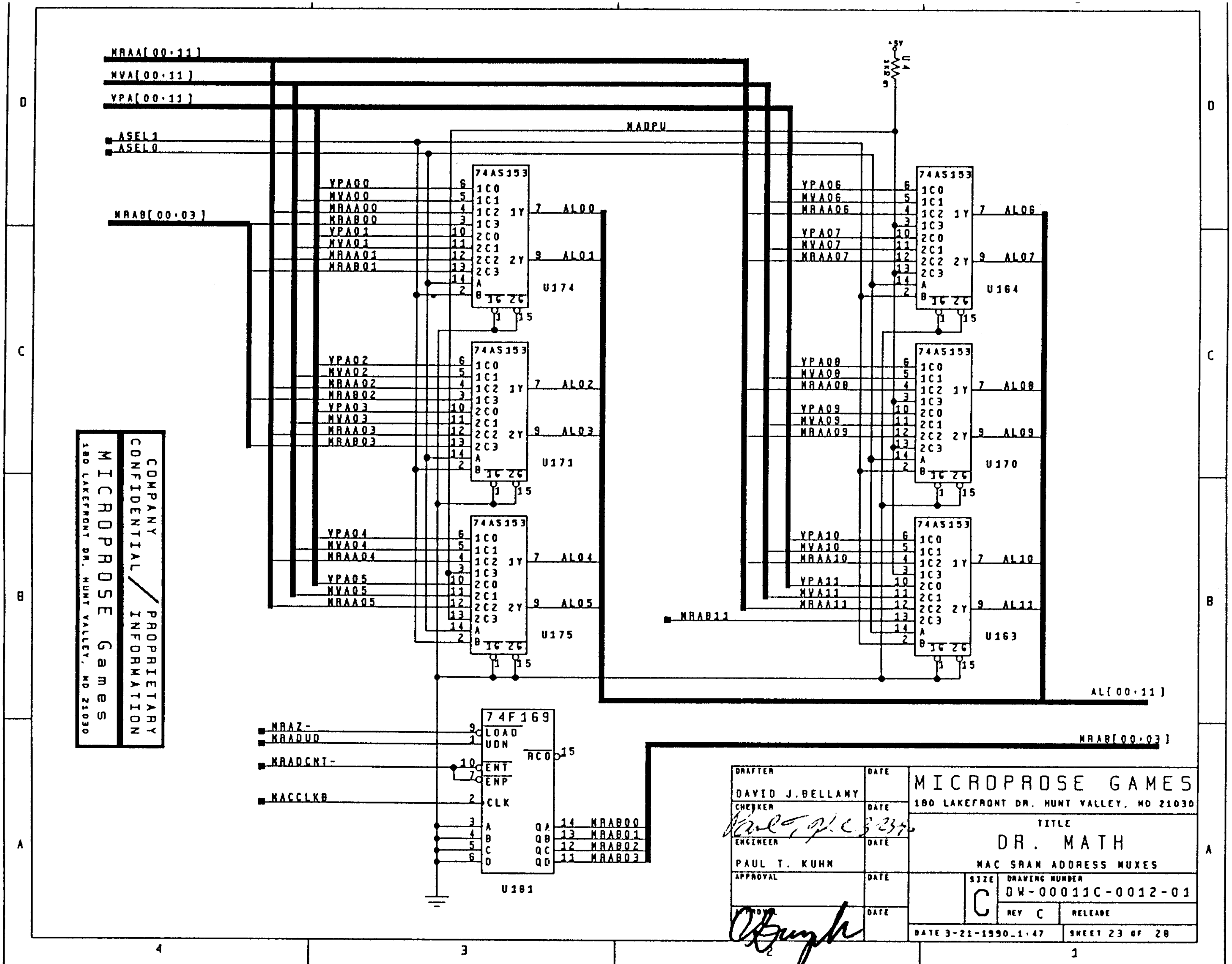
DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER: [signature]	DATE: 3-23-92	TITLE: DR. MATH MAC DUAL PORT SRAM ARRAY	
ENGINEER: PAUL T. KUHN	DATE	SIZE: C	DRAWING NUMBER: DW-00011C-0012-01
APPROVAL	DATE	REV: C	RELEASE
APPROVAL: [signature]	DATE	DATE 3-21-1990_1:45	SHEET 21 OF 28

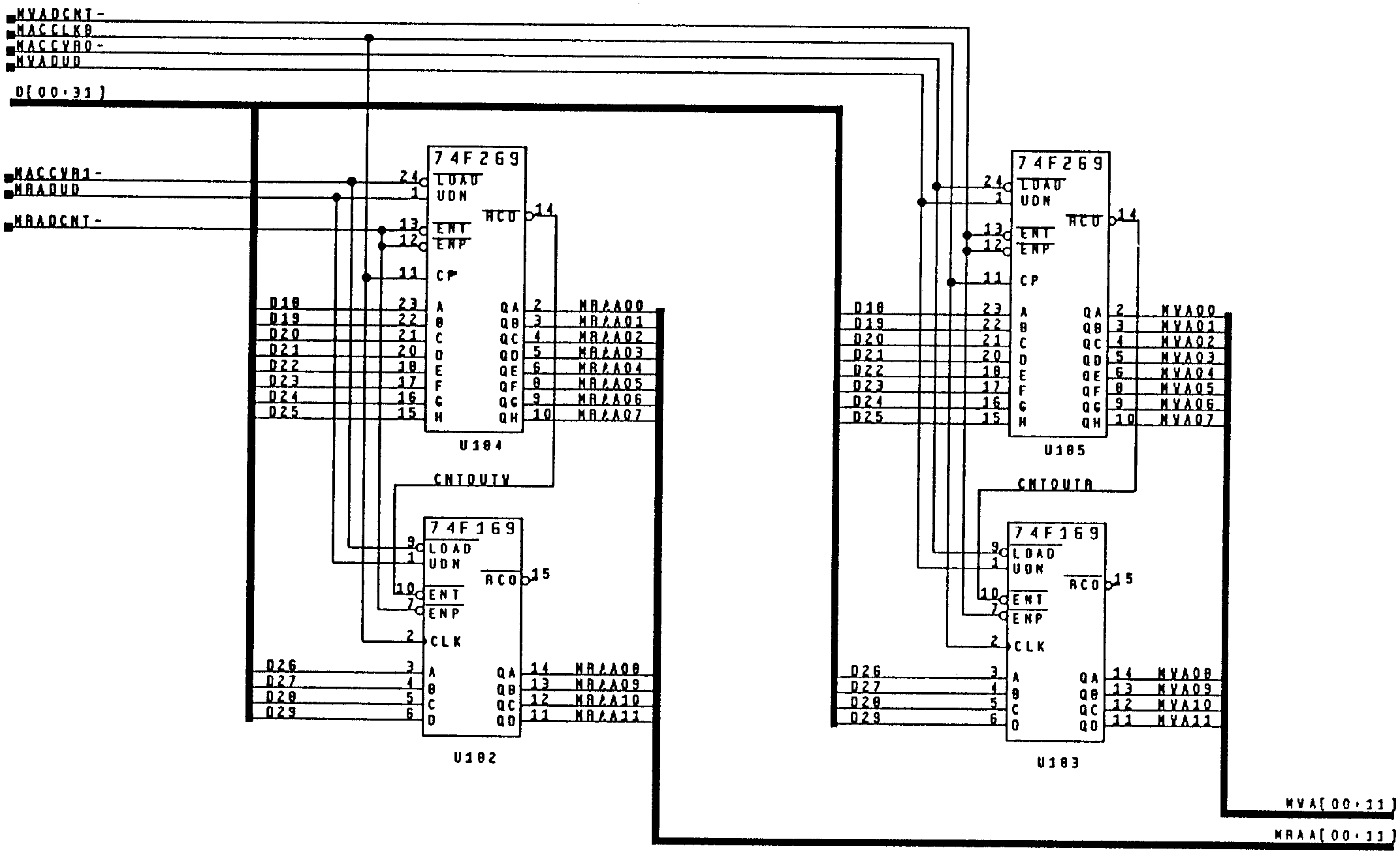


COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER: DAVID J BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER: Paul T Kuhn	DATE: 11-8-90	TITLE DR. MATH DUAL PORT SRAM AND MAC CONTROL
ENGINEER: PAUL T. KUHN	DATE	
APPROVAL	DATE	SIZE C — DRAWING NUMBER DW-00011C-0012-01
APPROVAL	DATE	REV M — RELEASE
		DATE 11-8-1990_10:48 — SHEET 22 OF 28


MRAA[00:11]
MVA[00:11]
VPA[00:11]
ASEL1
ASEL0
MADPU
MRAB[00:03]
+5V
U4
VPA00
MVA00
MRAA00
MRAB00
VPA01
MVA01
MRAA01
MRAB01
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AL01
U174
VPA02
MVA02
MRAA02
MRAB02
VPA03
MVA03
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MRAB03
AL02
AL03
U171
VPA04
MVA04
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VPA05
MVA05
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AL05
U175
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MRADUD
MRADCNT-
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MRAB00
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MRAB02
MRAB03
U181
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COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION
MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030
DRAFTER: DAVID J. BELLAMY
CHECKER
ENGINEER: PAUL T. KUHN
APPROVAL
MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030
TITLE: DR. MATH
MAC SRAM ADDRESS MUXES
SIZE C
DRAWING NUMBER: DW-00011C-0012-01
REV C
RELEASE
DATE 3-21-1990_1:47
SHEET 23 OF 28



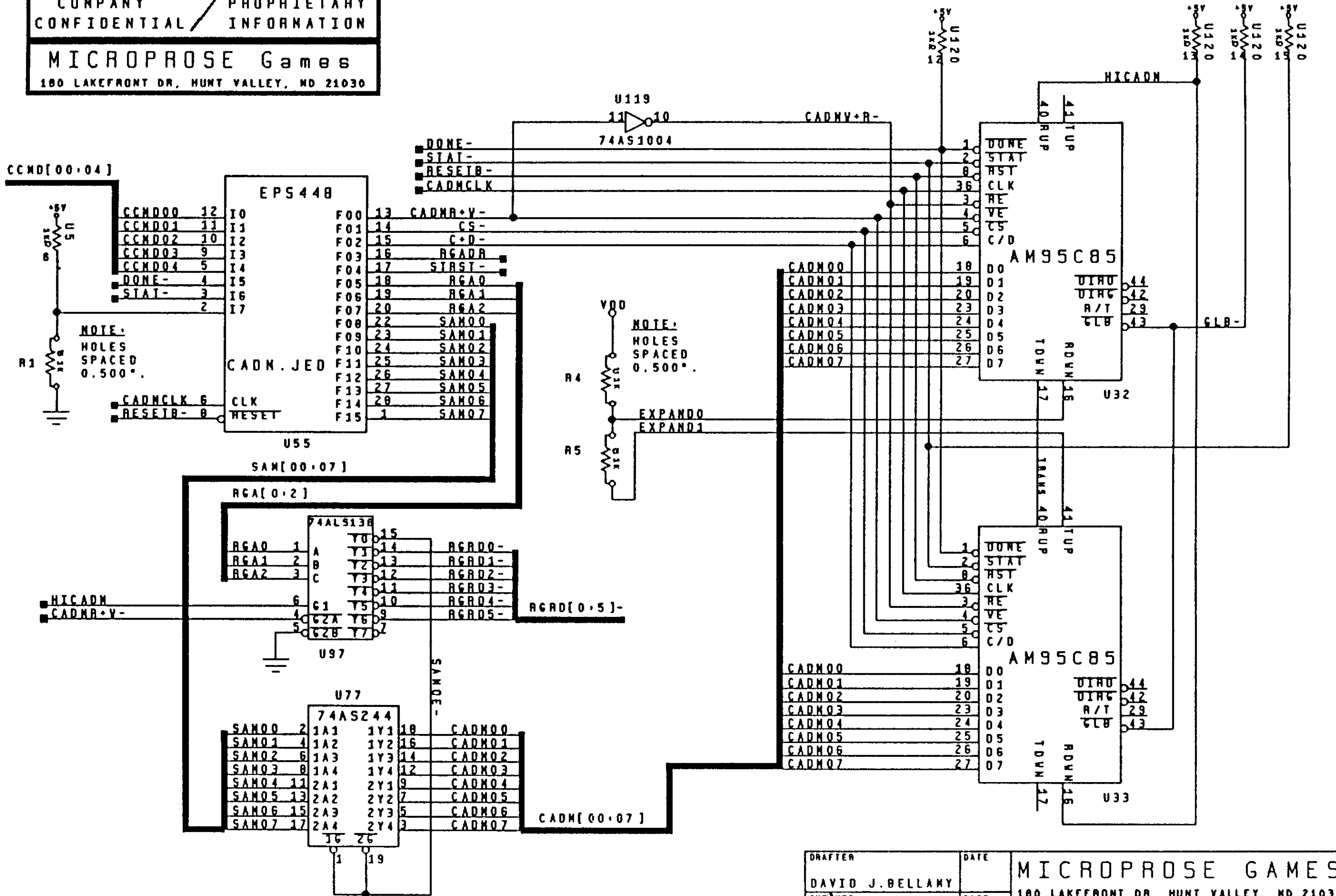
COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER: DAVID J.BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER: Paul T. Kuhn	DATE: 3-23-90	TITLE DR. MATH MAC SRAM ADDRESS COUNTERS	
ENGINEER: PAUL T. KUHN	DATE		
APPROVAL	DATE	SIZE: C	DRAWING NUMBER: DW-00011C-0012-01
APPROVAL: [signature]	DATE	REV: C	RELEASE
		DATE 3-21-1990_1:48	SHEET 24 OF 28

COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR, HUNT VALLEY, MD 21030

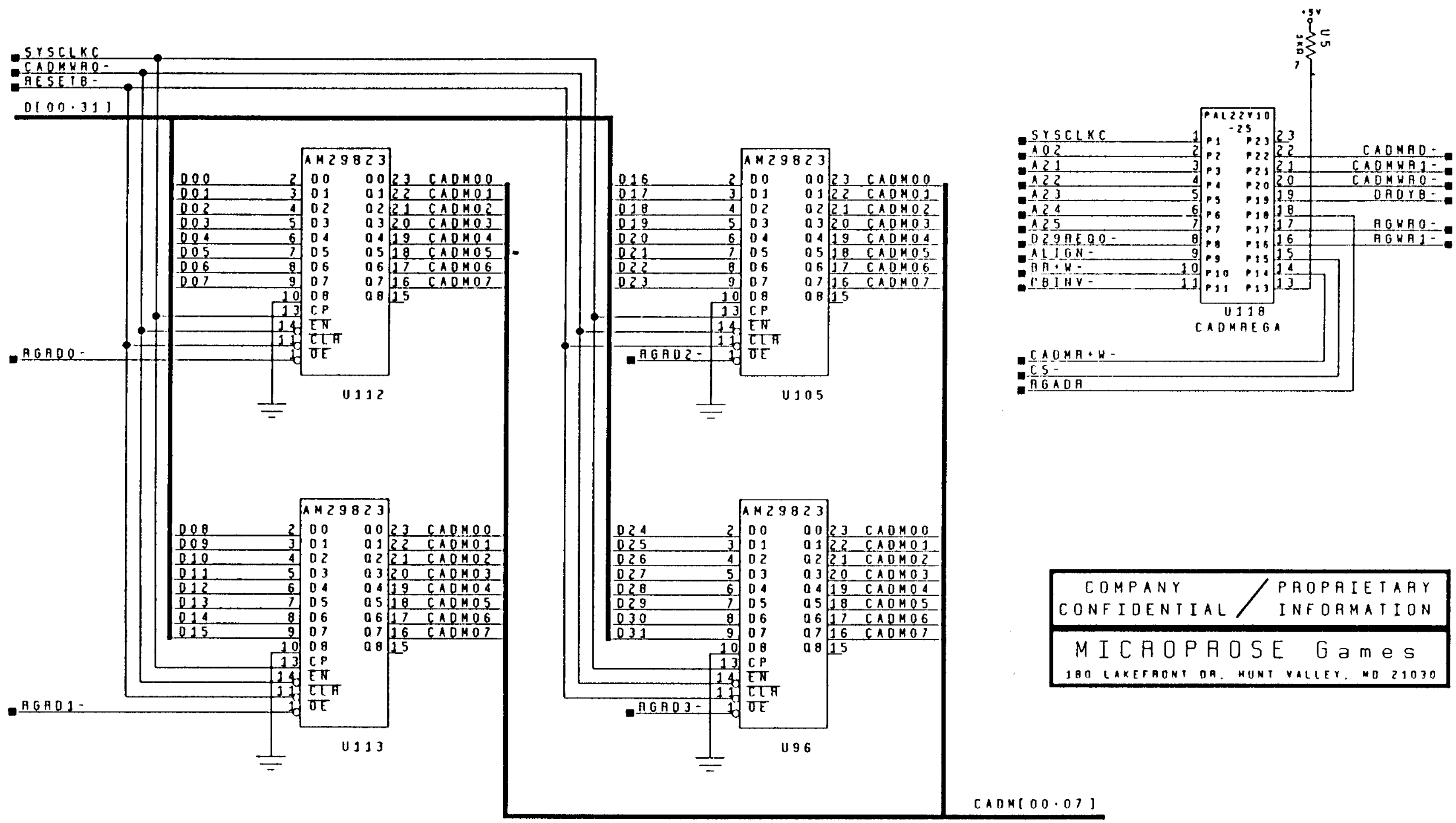


DRAFTER	DAVID J. BELLAMY
CHECKER	[signature] 3-23-90
ENGINEER	PAUL T. KUHN
APPROVAL	[signature]

MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

TITLE
DR. MATH
CADM AND CADM CONTROL

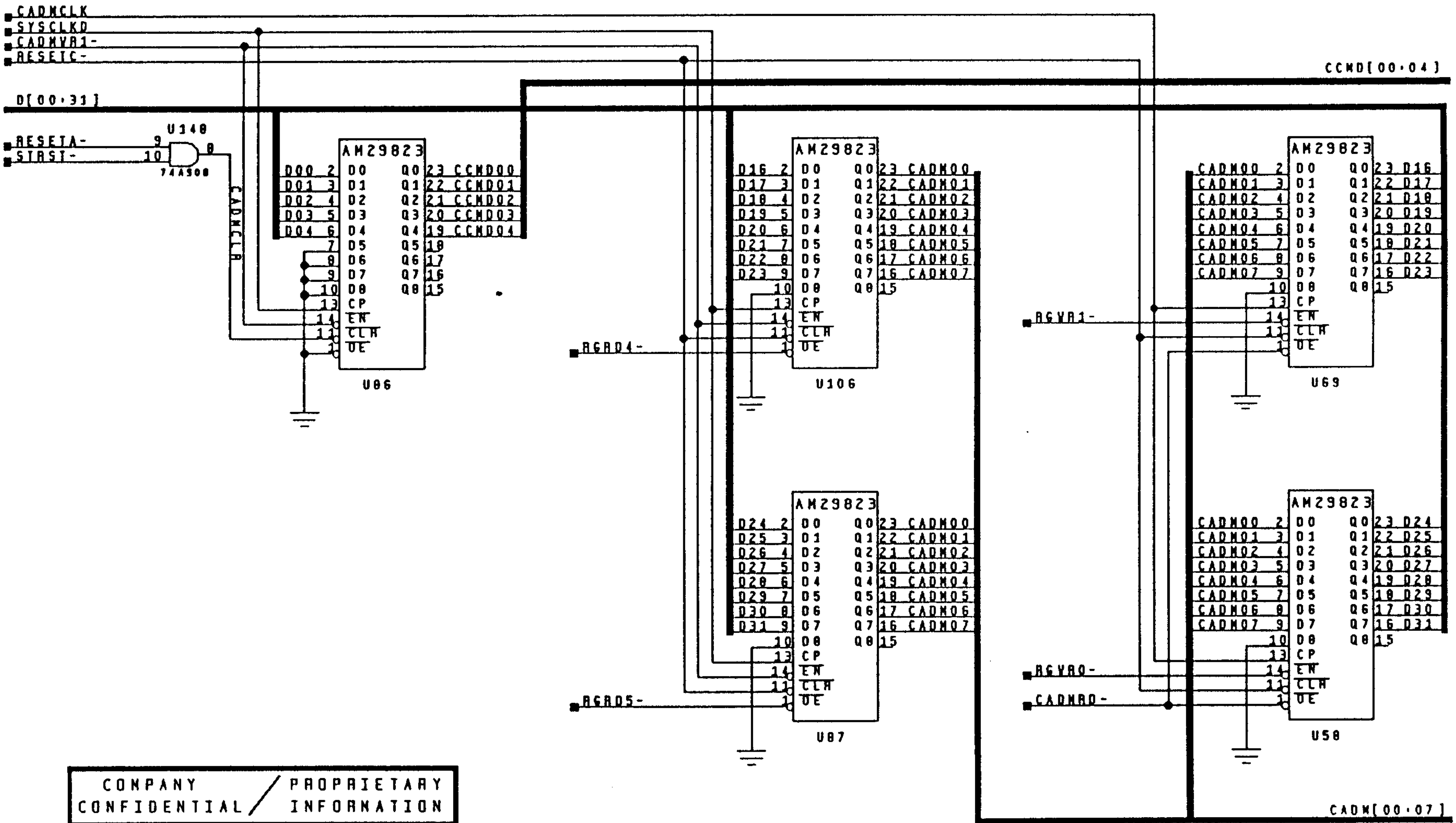
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RELEASE
DATE 3-21-1990_1:49
SHEET 25 OF 28



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

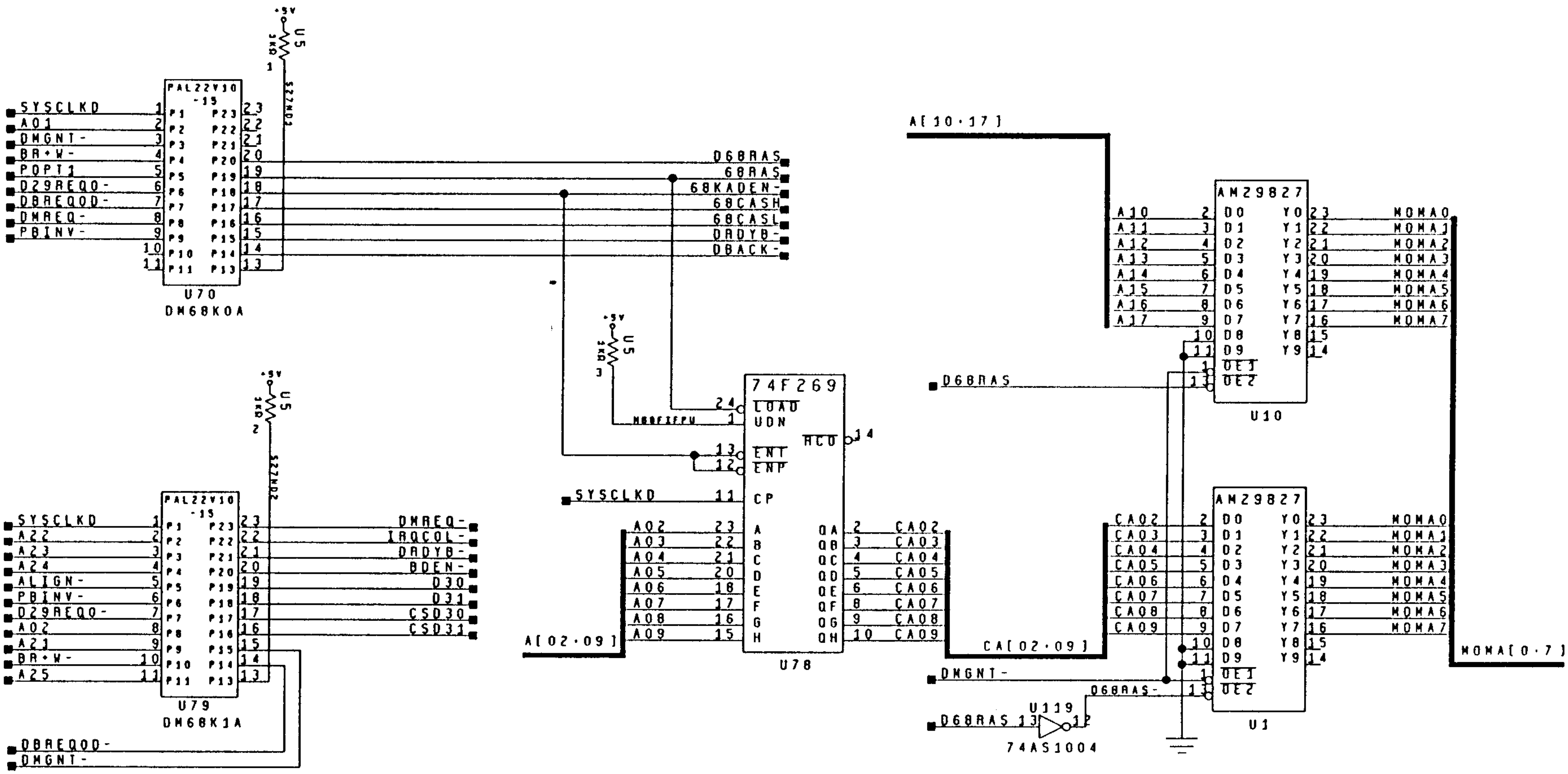
DRAFTER: PAUL T. KUHN	DATE	MICROPROSE GAMES 180 LAKEFRONT DR HUNT VALLEY, MD 21030
CHECKER: Paul T. Kuhn	DATE: 7-25-90	TITLE DR. MATH CADM DATA REGISTERS
ENGINEER: PAUL T. KUHN	DATE	
APPROVAL	DATE	SIZE: C · DRAWING NUMBER: DW-00011C-0012-01
APPROVAL	DATE	REV F · RELEASE
		DATE 7-6-1990 10:44 · SHEET 26 OF 28



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER: DAVID J.BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER: [signature]	DATE: 3-23-90	TITLE: DR. MATH
ENGINEER: PAUL T. KUHN	DATE	CADM DATA REGISTERS
APPROVAL	DATE	SIZE: C — DRAWING NUMBER: DW-00011C-0012-01 — REV C — RELEASE
APPROVAL: [signature]	DATE	DATE 3-21-1990_1:50 — SHEET 27 OF 28



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER: [signature]	DATE: 1-9-91	TITLE: DR. MATH DR MATH TO GSP PROGRAM MEMORY, FIFO AND INTERRUPT	
ENGINEER: PAUL T. KUHN	DATE		
APPROVAL	DATE	SIZE: C	DRAWING NUMBER: DW-00011C-0012-01 REV: F — RELEASE
APPROVAL	DATE	DATE 7-6-1990_11:06	SHEET 28 OF 28

BILL OF MATERIALS
DR. MATH P.C.B.
ASSEMBLY: A10-00002-001

DATE	ECN	REV	SHEET NUMBER 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
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	ECN	B	B				B																				
3-21-90	ECN	C	C	C	C	C	C	C	C																		
5-07-90	ECN014	D	D		D			D																			
5-07-90	ECN015	E	E						E																		
6-18-90	ECN038	F	F						F																		
7-16-90	ECN051	G	G	G			G		G																		
7-27-90	ECN055	H	H				H																				
8-01-90	ECN060	K	K	K	K	K	K	K	K																		
8-15-90	ECN064	L	L			L																					
9-04-90	ECN069	M	M	M					M																		
10-8-90	ECN081	N	N						N																		
10-8-90	ECN090	O	O			O			O																		
11-8-90	ECN137	P	P			P																					
1-14-91	ECN125	R	R		R																						

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DRIVE, HUNT VALLEY, MD 21030
CHECKER *Paul T. Kuhn*	DATE 1-14-91	
ENGINEER PAUL T KUHN	DATE	TITLE: BILL OF MATERIALS DR. MATH P.C.B. A10-00002-001
APPROVAL	DATE	DWG NO PL-00011A-0012-01 REV R
APPROVAL	DATE	DATE 1-14-1991_9:45 SHEET 1 OF 7 — A

ITEM	QTY	VENDOR PART NUMBER REF. DES.	PART DESCRIP	VALUE	MPG P/N
1 B	1	GAL22V10-15P U79	DM68K1A	15NS	120-00001-009
2 B	1	GAL22V10-15P U70	DM68K0A	15NS	120-00001-010
3 B	[0]	GAL22V10-25P [U118]	CADMREGA	25NS	120-00001-011
4	[0]	SN74ALS138N [U97]	3:8DEMUX		200-00138-200
5	1	68001-502 [J1],J2	2PINJUMPER	.100"	610-00002-002
6 *	[0]	AM95C85-12JC [U32,U33]	SMT CADM		130-95C85-412
7	6	SN74AS153N U175,U174,U163,U164,U171,U170	4:1DATAMUX		201-00153-200
8 B	1	GAL22V10-15P U111	DPSRAMA	15NS	120-00001-014
9 C*	[0]	EPS448-3P [U55]	CADM SAM	20MHZ	115-00001-003
10 *	4	IDT7134-S45J U139,U140,U141,U152	4Kx8DPRAM SMT	45NS	222-00003-445
11	5	F74F169PC U125,U177,U181,U182,U183	4BITU/DCNTR		203-00169-200
12	1	SN74ALS04BN U143	HEXINVERTR		200-00004-200
13	1	SN74AS08N U148	QUAD2INAND		201-00008-200
14 B	1	GAL22V10-15P U104	MACCREGA	15NS	120-00001-015
15 E*	1	AM27C010-155DC U153	128Kx8EPROM 29KBK2B0	150NS	110-00001-014
16 E*	1	AM27C010-155DC U154	128Kx8EPROM 29KBK2B1	150NS	110-00001-015
17 E*	1	AM27C010-155DC U167	128Kx8EPROM 29KBK3B0	150NS	110-00001-016
18 E*	1	AM27C010-155DC U160	128Kx8EPROM 29KBK3B1	150NS	110-00001-017

ITEM	QTY	PART NUMBER REF. DES.	PART DESCRIP	VALUE	MPG P/N
19	4	AM29C827APC U1,U10,U155,U157	10BITBUFFER		235-00006-200
20	7	AM29C823ASC **[U58,U69,U86,U87,U96,U105,U106,U112,U113]**,U137,U162, U165,U169,U172,U186,U146	SMT9BITBUSREG		235-00004-100
21 F*	1	AM29C323GC U149	MAC IC	10MHZ	130-00323-510
22	4	173D105X0035V C174,C175,C176,C188	AXTANTCAP	1UF	422-00072-105
23	1	LT1081-CN U176	RS232DRVR		235-00001-200
24	1	SN74LS393N U128	DUAL4BITCNTR		202-00393-200
25	1	22-05-7048 J4	4PINMOLEX	.100"	610-00601-004
26 B	1	GAL22V10-25P U121	UARTCTLA	25NS	120-00001-021
27	1	Z85C30-10JC U159	SMT UART		240-00001-400
28 D*	1	AM27C256-95DC U135	32Kx8EPROM 29KBK1B3.001	90NS	110-00001-118
29 D*	1	AM27C256-95DC U115	32Kx8EPROM 29KBK1B1.001	90NS	110-00001-119
30 D*	1	AM27C256-95DC U108	32Kx8EPROM 29KBK1B0.001	90NS	110-00001-120
31 D*	1	AM27C256-95DC U127	32Kx8EPROM 29KBK1B2.001	90NS	110-00001-121
32 D*	1	AM27C256-95DC U134	32Kx8EPROM 29KBK0B3.001	90NS	110-00001-122
33 D*	1	AM27C256-95DC U114	32Kx8EPROM 29KBK0B1.001	90NS	110-00001-123
34 D*	1	AM27C256-95DC U107	32Kx8EPROM 29KBK0B0.001	90NS	110-00001-124
35 D*	1	AM27C256-95DC U126	32Kx8EPROM 29KBK0B2.001	90NS	110-00001-125
36	8	SN74AS373DW U38,U39,U47,U48,U60,U61,U62,U63	SMT OCTD-LATCHES		201-00373-100

ITEM	QTY	PART NUMBER / REF. DES.	PART DESCRIP	VALUE	MPG P/N
37 B	1	GAL22V10-15P U138	ROMADLDA	15NS	120-00001-016
38 B	1	GAL22V10-15P U136	STATEM2A	15NS	120-00001-017
39	4	AM29C863APC U2,U3,U11,U12	9BIBUSDRVR		235-00005-200
40	3	SN74ALS2540N U82,U92,U100	OCTINVDRVR		200-02540-200
41 A	1	GAL16V8A-15P U116	RAMCNTLB	15NS	120-00001-123
42	5	SN74AS258N U83,U93,U101,U129,U131	QUAD2:1MUX		201-00258-200
43	2	AM29C821APC U75,U76	10BITREGISTER		235-00003-200
44	1	SN74AS175N U84	QUADDFLOPS		201-00175-200
45	11	74F269SC U68,U78,U85,U103,U110,U133,U178,U179,U180,U184,U185	SMTDECADEU/DCNTR		203-00269-100
46 B	1	GAL22V10-15P U109	RAMADLDA	15NS	120-00001-018
47 B	1	GAL22V10-15P U102	STATEMB	15NS	120-00001-119
48 A	1	GAL16V8A-15P U67	29DECODA	15NS	120-00001-024
49	* 16	TMS44C256-12NL U13,U21,U27,U34,U35,U37,U46,U57,U80,U81,U88,U89,U90,U91,U98,U99	256Kx4DRAM	120NS	220-00002-212
50	4	SN74AS245DW U43,U44,U52,U53	SMTOCTBIBUFFER		201-00245-100
51	1	SA101A221JAA C203	AXCERCAP	220PF	402-00195-221
52	1	SN74ALS1010N U20	TRI3INNAND		200-01010-200
53	35	SN74AS244DW U6,U7,U8,U14,U15,U16,U22,U23,U24,U28,U29,U30,U31,U36, U40,U41,U42,U45,U49,U50,U51,U54,U56,U64,U65,U66,U72,U73, U74,U95,U132,U144,U145,U150,U151,**[U77]**	SMTOCTBUFFERS		201-00244-100

ITEM	QTY	PART NUMBER REF. DES.	PART DESCRIP	VALUE	MPG P/N
54 B	1	GAL22V10-15P U59	CLFIFOA	15NS	120-00001-020
55 F*	1	AM29000-16GC U9	MICROPROCESOR	16MHZ	135-29000-516
56					
57	1	SN7407N U130	HEXOCDRIVERS		206-00007-200
58 A	1	GAL16V8A-25P U122	INTRACKB	25NS	120-00001-026
59					
60					
61	6	CCF-07 561G R2,R7,R8,R13,R14,R16	2%MFRES	560OHM	503-00002-561
62	2	SN74AS74N [U18],U147,U161	DUALDFLOPS		201-00074-200
63	[0]	XO-43D-24 [U17]	OSCILLATOR	24MHZ	290-00001-024
64	4	836C102X2PE U4,U5,U120,U124	SMTPULRESPAK	1KOHM	502-00001-102
65	6	CCF-07 100G [R3],R11,R12,R15,R17,R23,R24	2%MFRES	10OHM	503-00002-100
66	1	68001-503 [J3],J5	3PINJUMPER	.100"	610-00002-003
67	4	CCF-07 102G [R1,R4,R5],R9,R10,R19,R25	2%MFRES	1KOHM	503-00002-102
68	2	CCF-07 103G R6 ,R22	2%MFRES	10KOHM	503-00002-103
69	1	CCF-07 104G R20	2%MFRES	100KOHM	503-00002-104
70	1	1N914 D1	DIODE		300-00002-003
71	1	1N746A D2	ZENER	3.3V	301-00002-033
72	1	LM311N Q1	VOLTCOMPAR		280-00002-200

ITEM	QTY	PART NUMBER REF. DES.	PART DESCRIP	VALUE	MPG P/N
73	1	KSA1A211 SW1	PBSWITCH		625-00002-001
74	1	173D335X0020V C159	AXTANTCAP	3.3UF	422-00062-335
75	1	X0-43D-20 U168	OSCILLATOR	20MHZ	290-00001-020
76	1	X0-43D-32 U142	OSCILLATOR	32MHZ	290-00001-032
77	3	SN74AS1004AN [U25],U19,U119,U156	HEXINVDRIVRS		201-01004-200
78	3	HLMP3600 D3,D4,D5	LED	RED	305-00003-002
79	1	ICTE-5 D6	ZENER		300-00001-002
80	10	7-0805G-5 TP5,TP4,TP3,TP2,TP1,TP6,TP7,TP8,TP9,TP10	TESTPIN		710-00001-001
81	1	26-64-5100	MOLEX10PIN	.156"	610-00601-010
	0	09-52-3101 P3	MOLEX10PIN	.156"	610-10600-010
82	8	TAJC156M010R C5,C51,C59,C102,C124,C187,C199,C200	SMTTANTCAP	15UF	420-00002-156
83	41	11C1210Z5U334M050NT C112,C113,C185,C104,C177,C173,C164,C161,C160,C156,C153, C146,C145,C144,C141,C140,C132,C131,C125,C123,C96,C95, C94,C93,C86,C85,C53,C49,C39,C34,C33,C31,C27, C23,C18,C14,C10,C105,C28,C32,C50	SMTCERCAP	0.33UF	401-02000-334
84	146	11C1206Z5U104M050NT C11,C16,C193,C128,C183,C150,C118,C90,C67,C9,C8,C7,C6,C4, C3,C2,C1,C41,C12,C13,C15,C194,C195,C196,C197,C198, C163,C184,C186,C189,C190,C191,C192,C99,C89,C88,C87,C84, C83,C82,C81,C80,C182,C181,C180,C179,C178,C172,C171,C170, C169,C168,C167,C166,C165,C162,C158,C157,C155,C154,C152, C151,C149,C148,C147,C143,C142,C138,C137,C136,C135,C134, C133,C130,C129,C127,C126,C122,C121,C120,C119,C117,C116, C115,C114,C111,C110,C109,C108,C107,C106,C103,C101,C98, C97,C92,C91,C79,C78,C77,C76,C75,C74,C72,C71,C70,C69,C68, C66,C65,C64,C63,C62,C61,C60,C58,C57,C56,C55,C52,C54,C48, C47,C46,C45,C44,C43,C42,C40,C38,C37,C36,C35,C30,C29,C26, C25,C24,C22,C21,C20,C19,C17,C73,C139,C100	SMTCERCAP	0.1UF	401-01000-104
85	1	92984-2-01-20-30 P2	2x20HEADER	.100"	610-10100-040

ITEM	QTY	PART NUMBER REF. DES.	PART DESCRIP	VALUE	MPG P/N
86	1	92984-2-01-32-30 P1	2x32HEADER	.100"	610-10100-064
87 A	[0]	ICO-320-MTT **[UX67,UX116,UX117,UX122]**	.3x20PINSOCKET		600-00001-320
88 B	[0]	ICO-324-MTT **[UX59,UX70,UX79,UX102,UX104,UX109,UX111,UX118,UX121, UX136,UX138]**	.3x24PINSOCKET		600-00001-324
89 C	[0]	110-13-328-41-001 **[UX55,UX166,UX173]**	.3x28PINSOCKET		600-00001-328
90 D	8	ICO-628-MTT UX107,UX108,UX114,UX115,UX126,UX127,UX134,UX135	.6x28PINSOCKET		600-00001-628
91 E	4	2-644018-2 UX153,UX154,UX160,UX167	.6x32PINSOCKET		600-00003-632
92 F	1	CPAS-169-ZSTT UX9,**[UX149]**	169PINPGASOCKET		601-00002-169
93	[0]	SRS8-12-01	SPACER	.750"	700-00001-003
94	2	68786-102	SHUNT		715-00001-001
95	1	CCF-07 820G R21	2PCMFRES	82OHM	503-00002-820
96	1	FRJ-50 R18	JUMPRES	0OHM	503-00001-000
96	1	C410C104M5U5CA C201	AXCERCAP	.1UF	402-00382-104
97 C*	1	EPS448-3P U166	MAC.2 SAM	20MHZ	115-00001-002
98 C*	1	EPS448-3P U173	MAC.1 SAM	20MHZ	115-00001-001
99	1	C410C101J1R5CA C202	AXCERCAP	100PF	402-00195-101

	425				

NOTES:

1. PARTS ERQUIRING 0.33UF DECOUPLING CAPACITORS ARE DESIGNATED WITH AN ASTERISK (*) BETWEEN <u>ITEM</u> AND <u>QTY</u> COLUMNS.
2. PARTS REQUIRING SOCKETS ARE MARKED WITH A LETTER CORRESPONDING TO THE SOCKETS (SOCKETS ARE ITEMS 87 - 92).
3. PARTS WITH REFERENCE DESIGNATORS IN BRACKETS [] WILL MOT BE POPULATED DURING PRODUCTION.

MICROPROSE GAMES

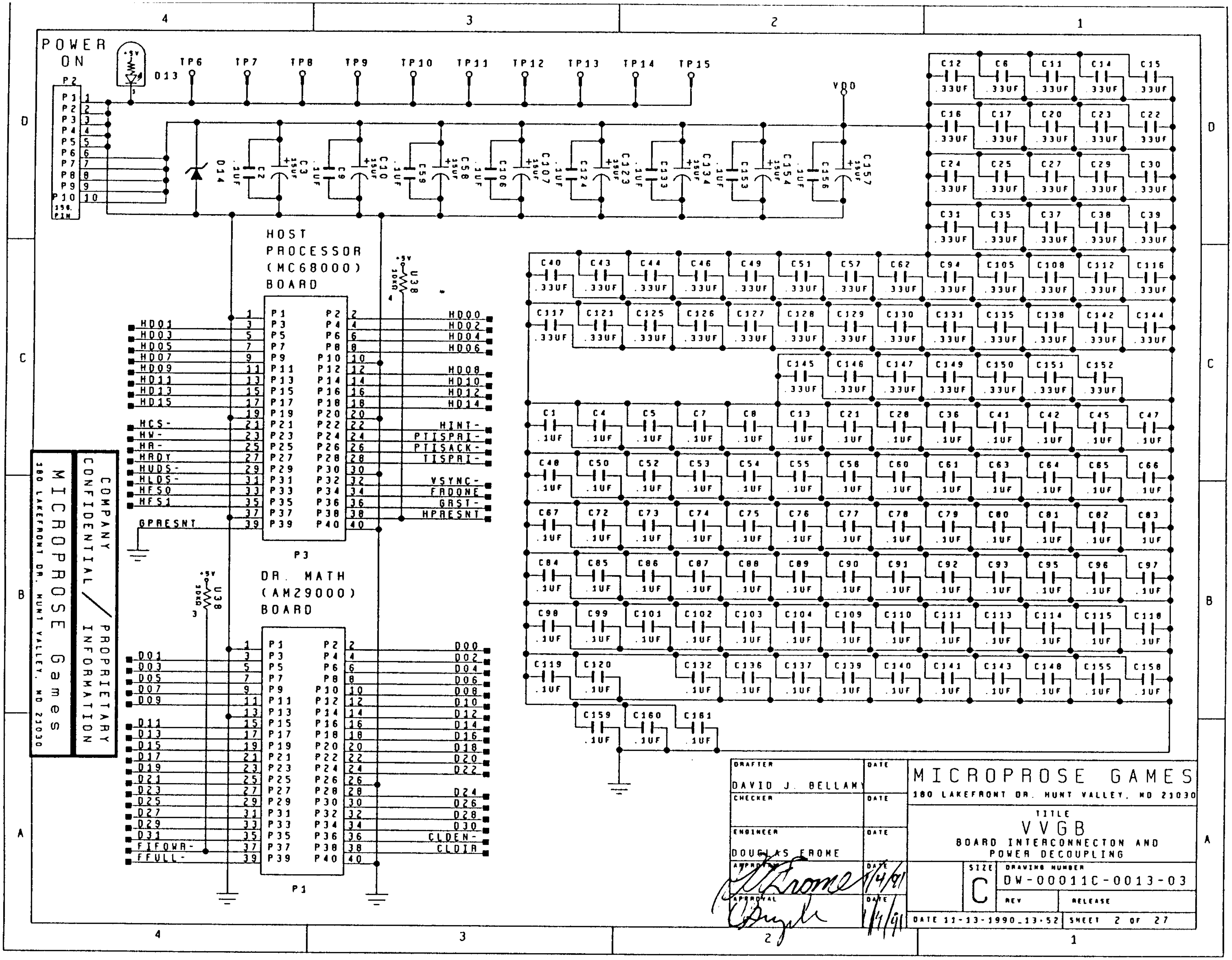
VIDEO GRAPHICS
PRINTED CIRCUIT
BOARD ASSEMBLY
(with VCLIPPERS)

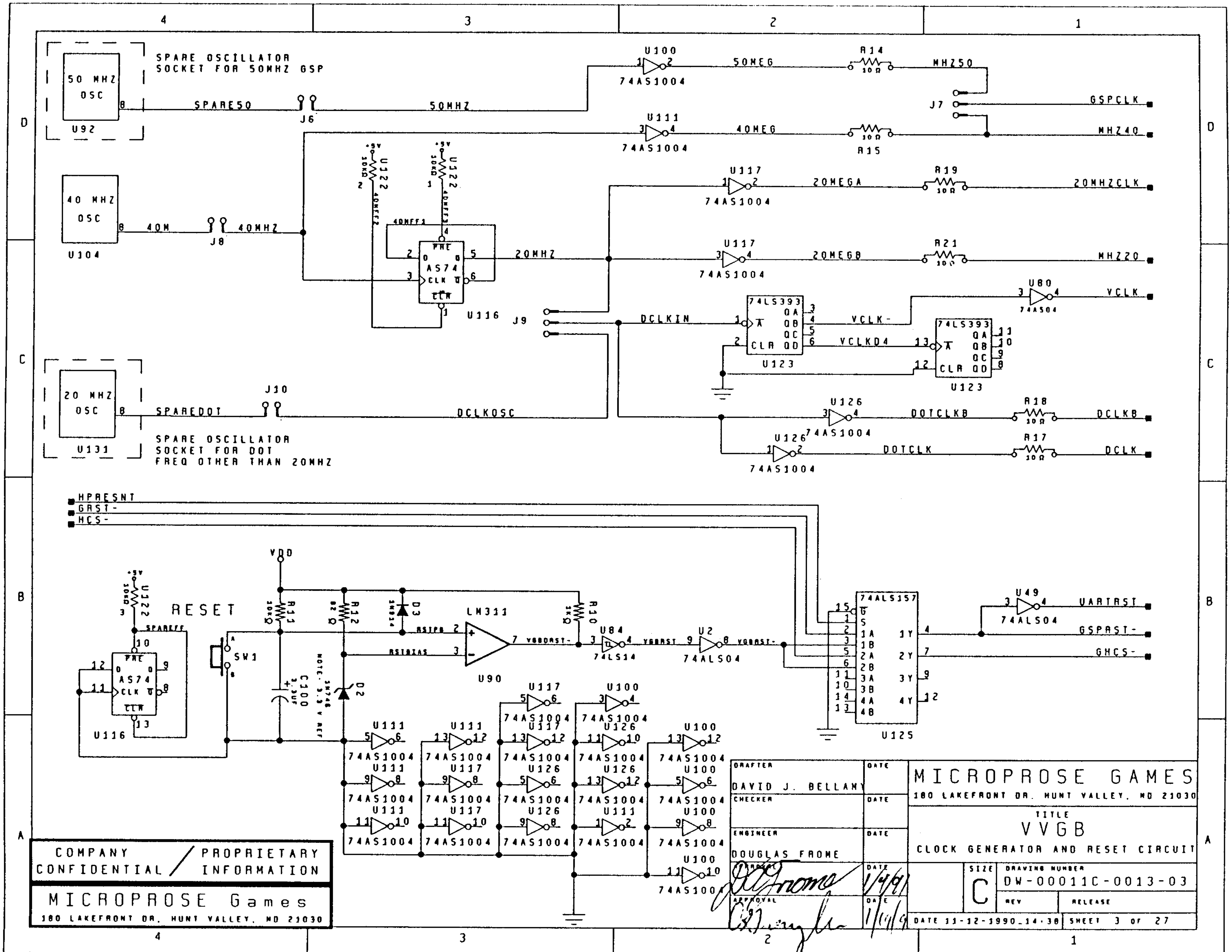
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11-28-90	ECN145	A	A																									A									

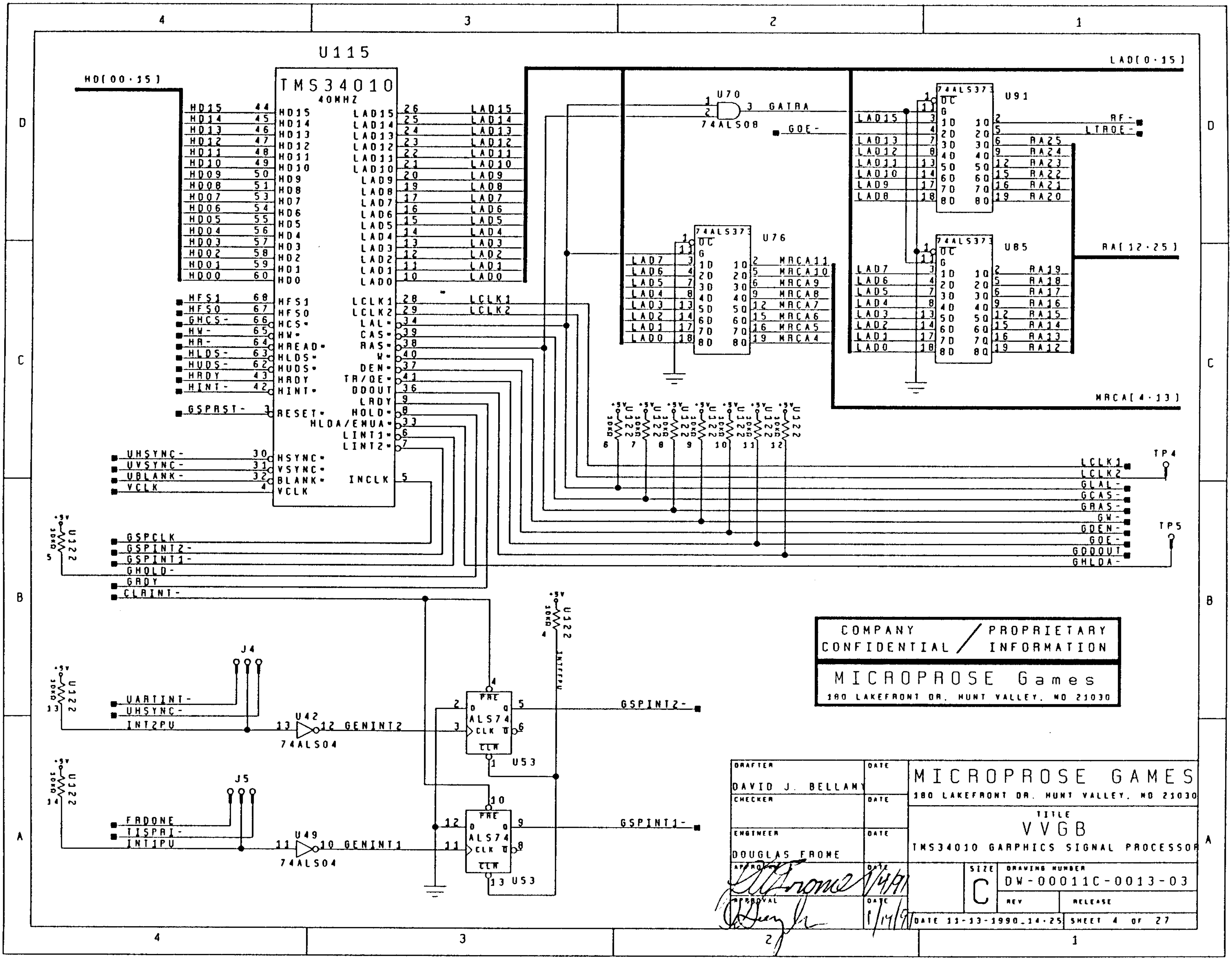
COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

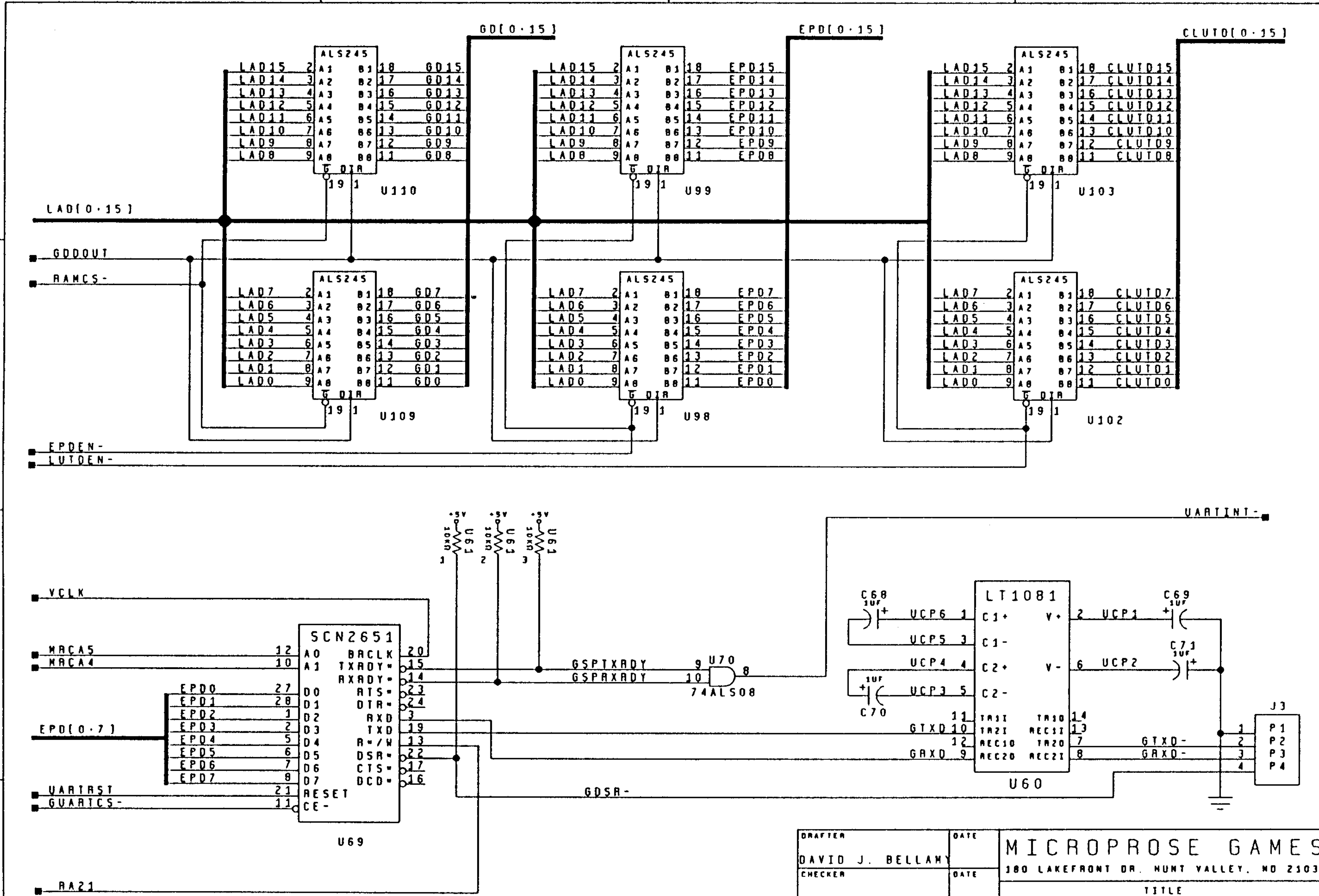
MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER	DATE	
DAVID J. BELLAMY		MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER	DATE	TITLE VVGB PRINT CIRCUIT BOARD ASSEMBLY
ENGINEER DOUGLAS FROME	DATE	
APPROVAL	DATE	SIZE C · DRAWING NUMBER DW-00011C-0013-03
APPROVAL	DATE	REV A · RELEASE
		DATE 11-28-1990_13:08 · SHEET 1 OF 27


POWER ON
D13
TP6 TP7 TP8 TP9 TP10 TP11 TP12 TP13 TP14 TP15
VDD
P2
156 PIN
D14
HOST PROCESSOR (MC68000) BOARD
P3
DR. MATH (AM29000) BOARD
P1
U38
GPRESNT
HD00 HD01 HD02 HD03 HD04 HD05 HD06 HD07 HD08 HD09 HD10 HD11 HD12 HD13 HD14 HD15
HCS- HW- HR- HRDY HUDS- HLDS- HFS0 HFS1
HINT- PTISPRI- PTISACK- TISPRI- VSYNC- FRDONE GRST- HPRESNT
FIFOWR- FFULL- CLDEN- CLDIR
.33UF
.1UF
15UF
COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION
MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030
DRAFTER DAVID J. BELLAMY
CHECKER
ENGINEER DOUGLAS FROME
MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030
TITLE
VVGB
BOARD INTERCONNECTON AND POWER DECOUPLING
SIZE C
DRAWING NUMBER DW-00011C-0013-03
DATE 11-13-1990_13:52
SHEET 2 OF 27


SPARE OSCILLATOR SOCKET FOR 50MHZ GSP
50 MHZ OSC
U92
SPARE50
J6
50MHZ
U100
74AS1004
50MEG
R14
10 Ω
MHZ50
J7
GSPCLK
U111
74AS1004
40MEG
R15
MHZ40
40 MHZ OSC
U104
40M
J8
40MHZ
+5V
U122
10KΩ
40MHFF2
40MHFF1
PRE
AS74
CLK
CLR
U116
20MHZ
U117
74AS1004
20MEGA
R19
20MHZCLK
20MEGB
R21
MHZ20
74LS393
U123
DCLKIN
VCLK-
VCLKD4
U80
74AS04
VCLK
J9
20 MHZ OSC
U131
J10
SPAREDOT
DCLKOSC
SPARE OSCILLATOR SOCKET FOR DOT FREQ OTHER THAN 20MHZ
U126
74AS1004
DOTCLKB
R18
DCLKB
DOTCLK
R17
DCLK
HPRESNT
GRST-
HCS-
VDD
RESET
SPAREFF
SW1
R11
10KΩ
R12
82 Ω
D3
1N914
RSTPB
RSTBIAS
C100
3.3UF
D2
1N746
NOTE: 3.3 V REF
LM311
U90
VGBGRST-
U84
74LS14
VGBRST
U2
74ALS04
VGBRST-
R10
1KΩ
74ALS157
U125
U49
74ALS04
UARTRST
GSPRST-
GHCS-
DRAFTER
DAVID J. BELLAMY
CHECKER
ENGINEER
DOUGLAS FROME
APPROVAL
DATE
1/4/91
MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030
TITLE
VVGB
CLOCK GENERATOR AND RESET CIRCUIT
SIZE
C
DRAWING NUMBER
DW-00011C-0013-03
REV
RELEASE
DATE 11-12-1990_14:38
SHEET 3 OF 27
COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION
MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

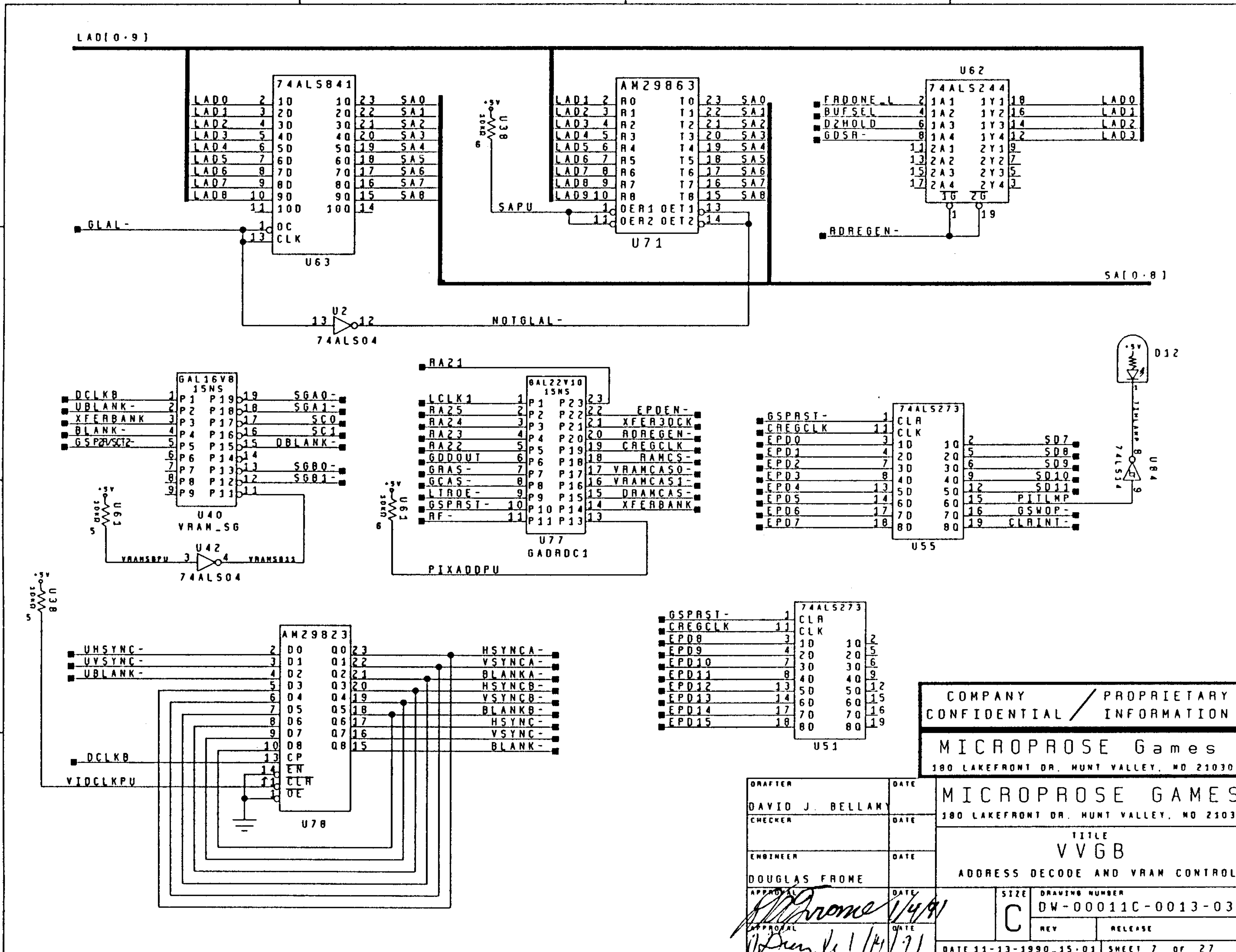

U115
TMS34010
40MHZ
HD(00-15)
LAD(0-15)
RA(12-25)
MRCA(4-13)
U70
74ALS08
GATRA
GOE-
U91
74ALS373
U76
74ALS373
U85
74ALS373
RF-
LTROE-
U42
74ALS04
GENINT2
U49
74ALS04
GENINT1
U53
ALS74
J4
J5
UARTINT-
UHSYNC-
INT2PU
FRDONE
TISPRI-
INT1PU
GSPCLK
GSPINT2-
GSPINT1-
GHOLD-
GRDY
CLRINT-
UHSYNC-
UVSYNC-
UBLANK-
VCLK
HFS1
HFS0
GHCS-
HW-
HR-
HLDS-
HUDS-
HRDY
HINT-
GSPRST-
LCLK1
LCLK2
GLAL-
GCAS-
GRAS-
GW-
GDEN-
GOE-
GDDOUT
GHLDA-
TP4
TP5
INTFPU
COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION
MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030
DRAFTER
DAVID J. BELLAMY
CHECKER
ENGINEER
DOUGLAS FROME
APPROVAL
MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030
TITLE
VVGB
TMS34010 GARPHICS SIGNAL PROCESSOR
SIZE
C
DRAWING NUMBER
DW-00011C-0013-03
REV
RELEASE
DATE 11-13-1990_14:25
SHEET 4 OF 27



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

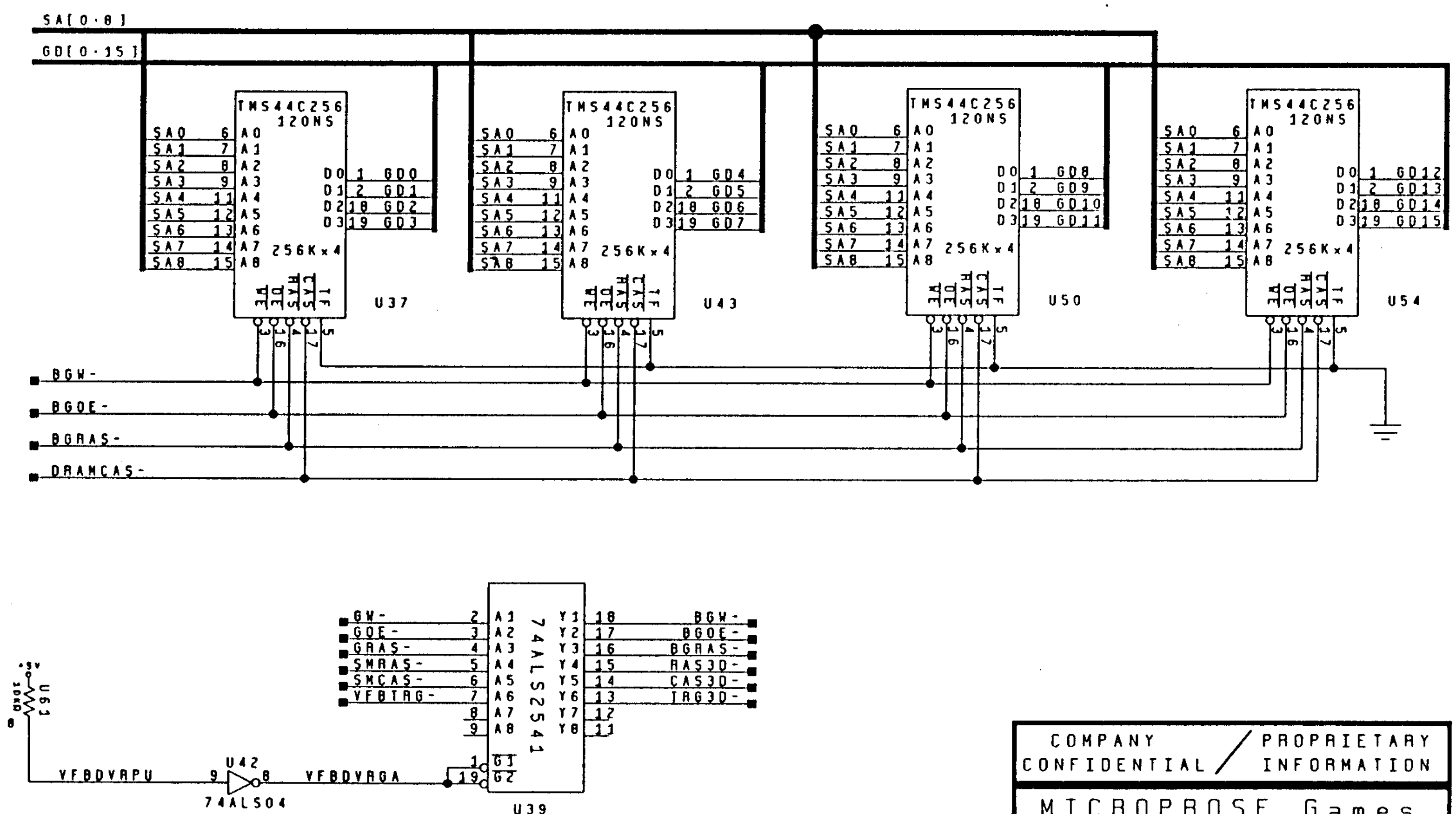
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CHECKER	DATE	TITLE: VVGB DATA BUSSES AND MONITOR INTERFACE
ENGINEER: DOUGLAS FROME	DATE	
APPROVAL: [signature]	DATE: 1/4/91	SIZE: C — DRAWING NUMBER: DW-00011C-0013-03
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		DATE 11-14-1990_14:46 — SHEET 5 OF 27



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

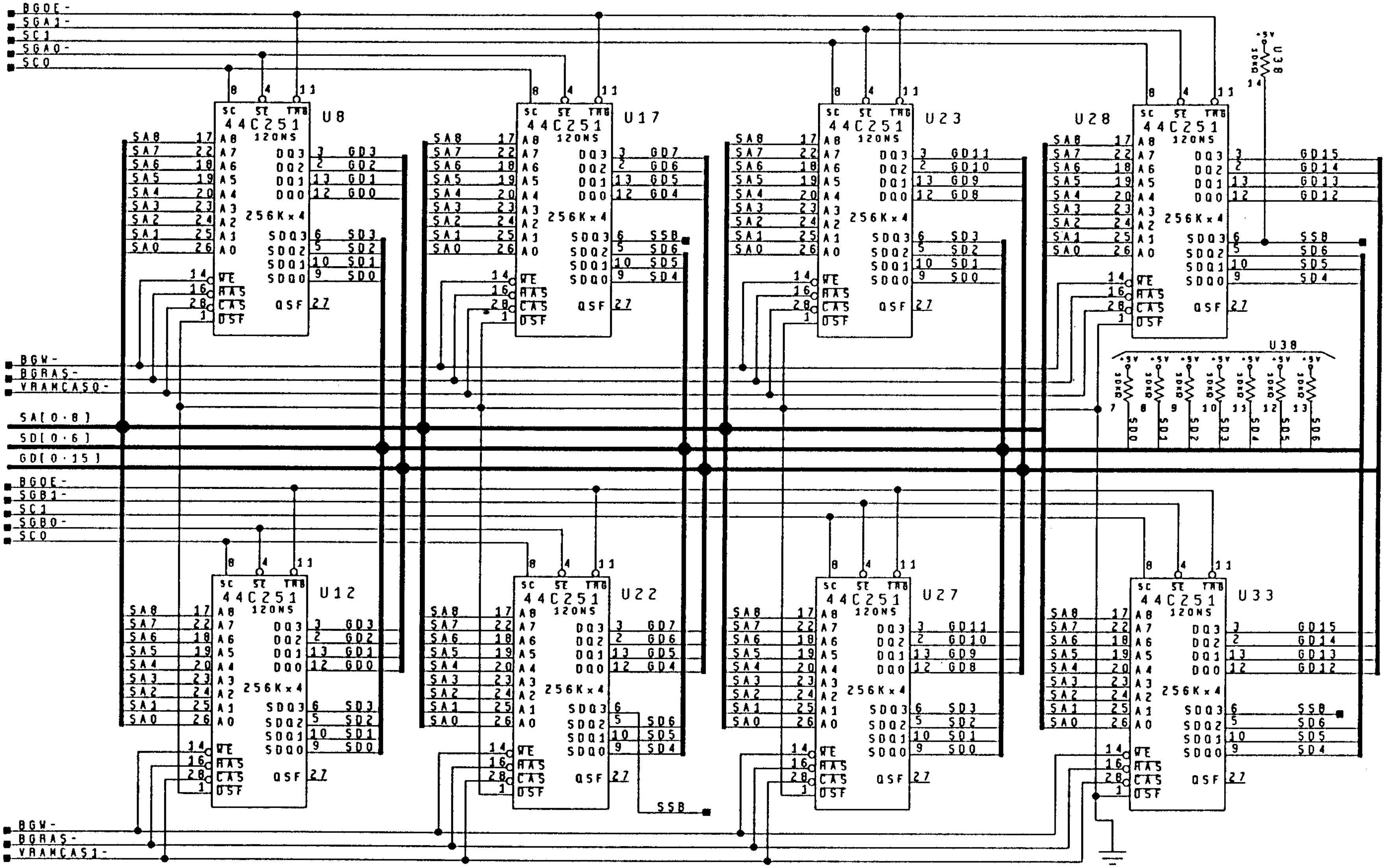
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CHECKER	DATE	TITLE: VVGB ADDRESS DECODE AND VRAM CONTROL
ENGINEER: DOUGLAS FROME	DATE	
APPROVAL: [signature]	DATE: 1/4/91	SIZE: C — DRAWING NUMBER: DW-00011C-0013-03
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		DATE 11-13-1990_15:01 — SHEET 7 OF 27



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

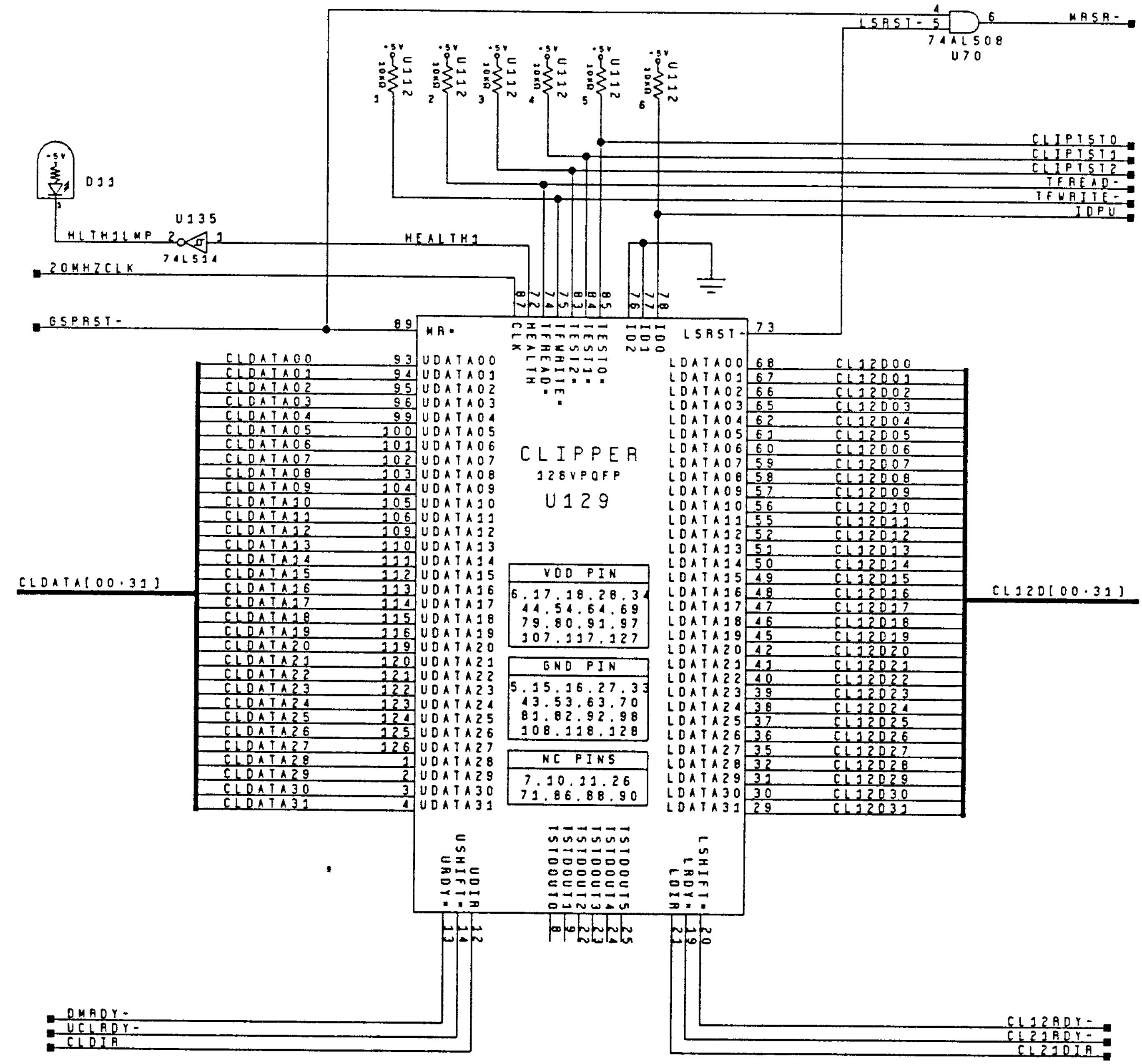
DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER	DATE	TITLE: VVGB GSP DRAM BANK
ENGINEER: DOUGLAS FROME	DATE	
APPROVAL: D Frome	DATE: 1/4/91	SIZE: C — DRAWING NUMBER: DW-00011C-0013-03
APPROVAL: [signature]	DATE: 1/4/91	REV — RELEASE
		DATE 11-13-1990_15:03 — SHEET 8 OF 27



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER	DATE	TITLE: VVGB	
ENGINEER: DOUGLAS FRONE	DATE	GSP SPRITE MEMORY	
APPROVAL: [signature]	DATE: 1/4/91	SIZE: C	DRAWING NUMBER: DW-00011C-0013-03
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COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

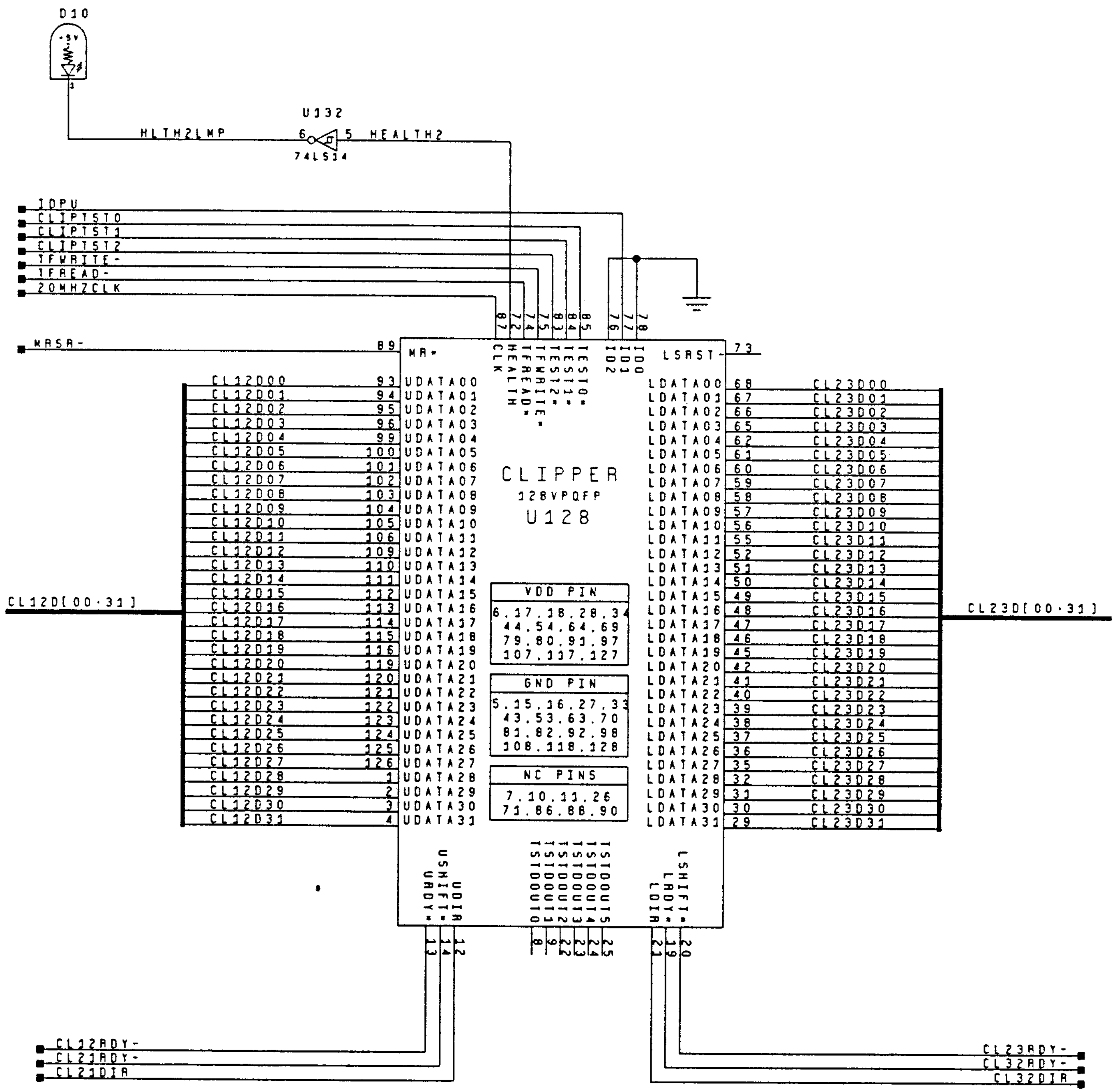
MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER: DAVID J. BELLAMY	DATE
CHECKER	DATE
ENGINEER: DOUGLAS FROME	DATE
APPROVAL	DATE: 1/14/91
APPROVAL	DATE: 1/14/91

MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

TITLE: VVGB
CLIPPER ASIC 1
Z ≥ d

SIZE: C
DRAWING NUMBER: DW-00011C-0013-03
REV
RELEASE
DATE 11-15-1990_12:09
SHEET 10 OF 27



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

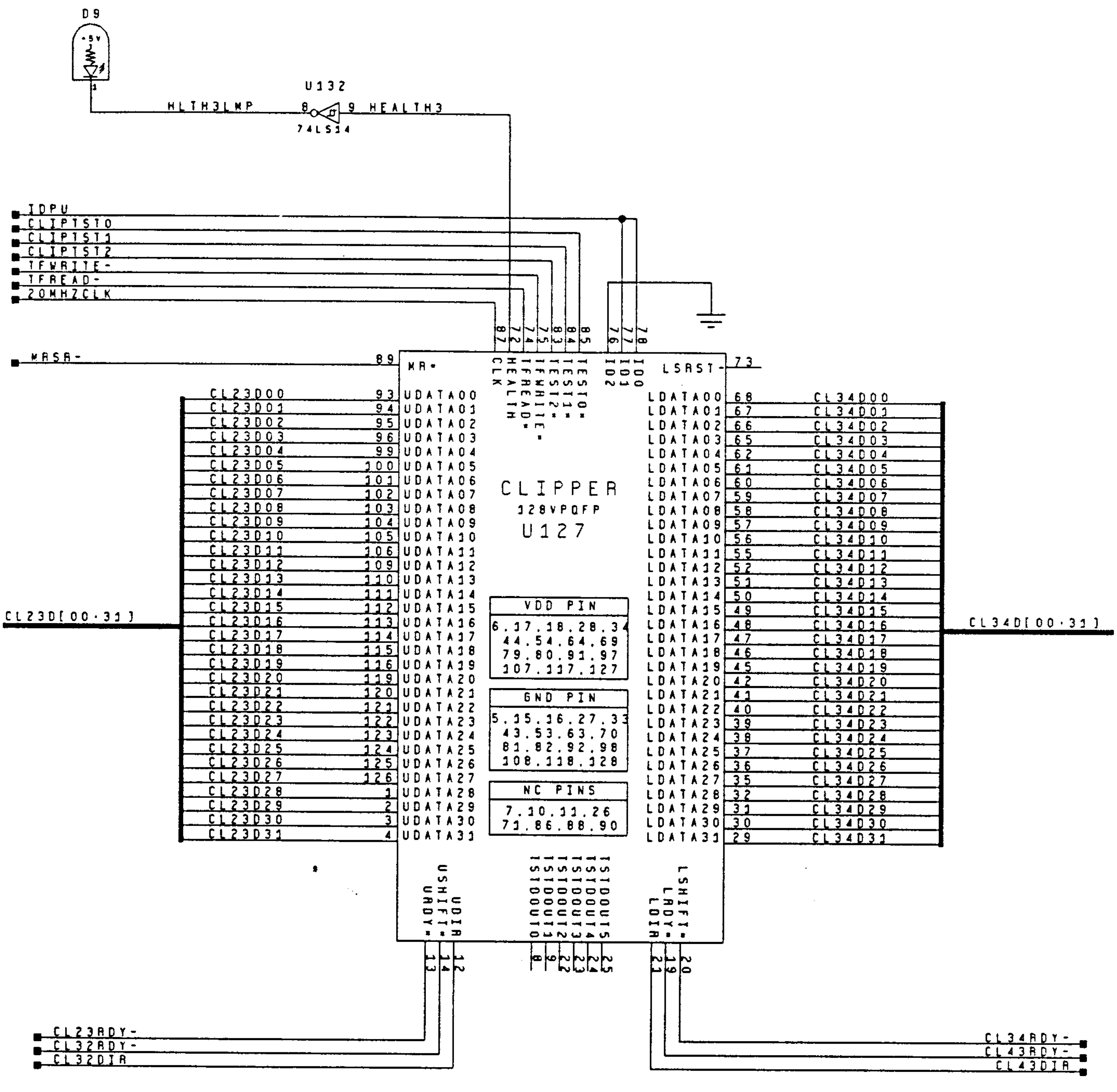
MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER: DAVID J. BELLAMY	DATE
CHECKER	DATE
ENGINEER: DOUGLAS FROME	DATE
APPROVAL	DATE 1/4/91
APPROVAL	DATE 1/4/91

MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

TITLE
VVGB
CLIPPER ASIC 2
2 = d

SIZE: C
DRAWING NUMBER: DW-00011C-0013-03
REV
RELEASE
DATE 12-17-1990_9:30
SHEET 11 OF 27



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

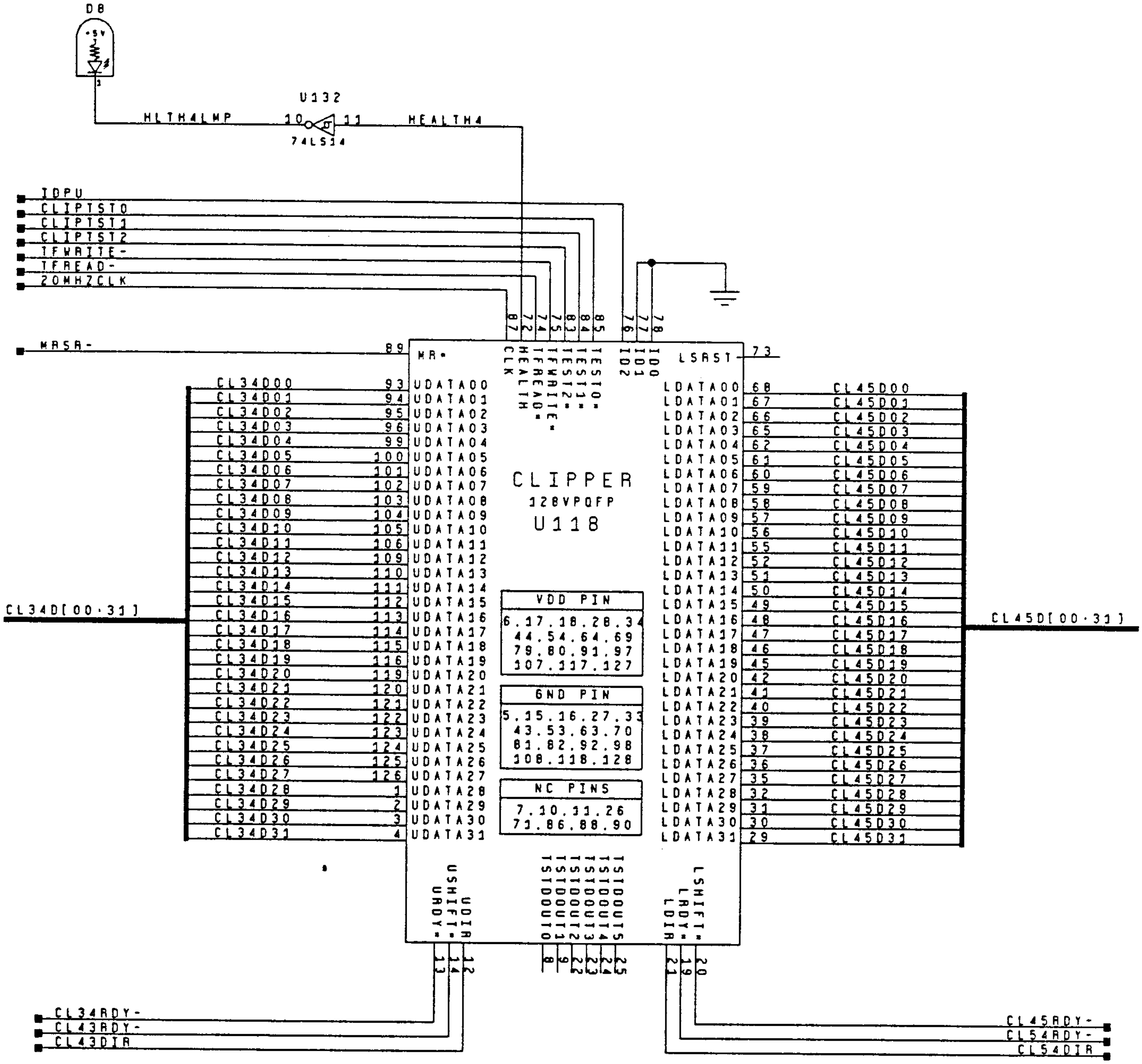
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CHECKER	DATE
ENGINEER: DOUGLAS FROME	DATE
APPROVAL	DATE 1/4/91
APPROVAL	DATE 1/4/91

MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

TITLE
VVGB
CLIPPER ASIC 3
Y ≤ Y_{MAX}

SIZE C | DRAWING NUMBER DW-00011C-0013-03 | REV | RELEASE

DATE 12-17-1990_9:11 | SHEET 12 OF 27



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

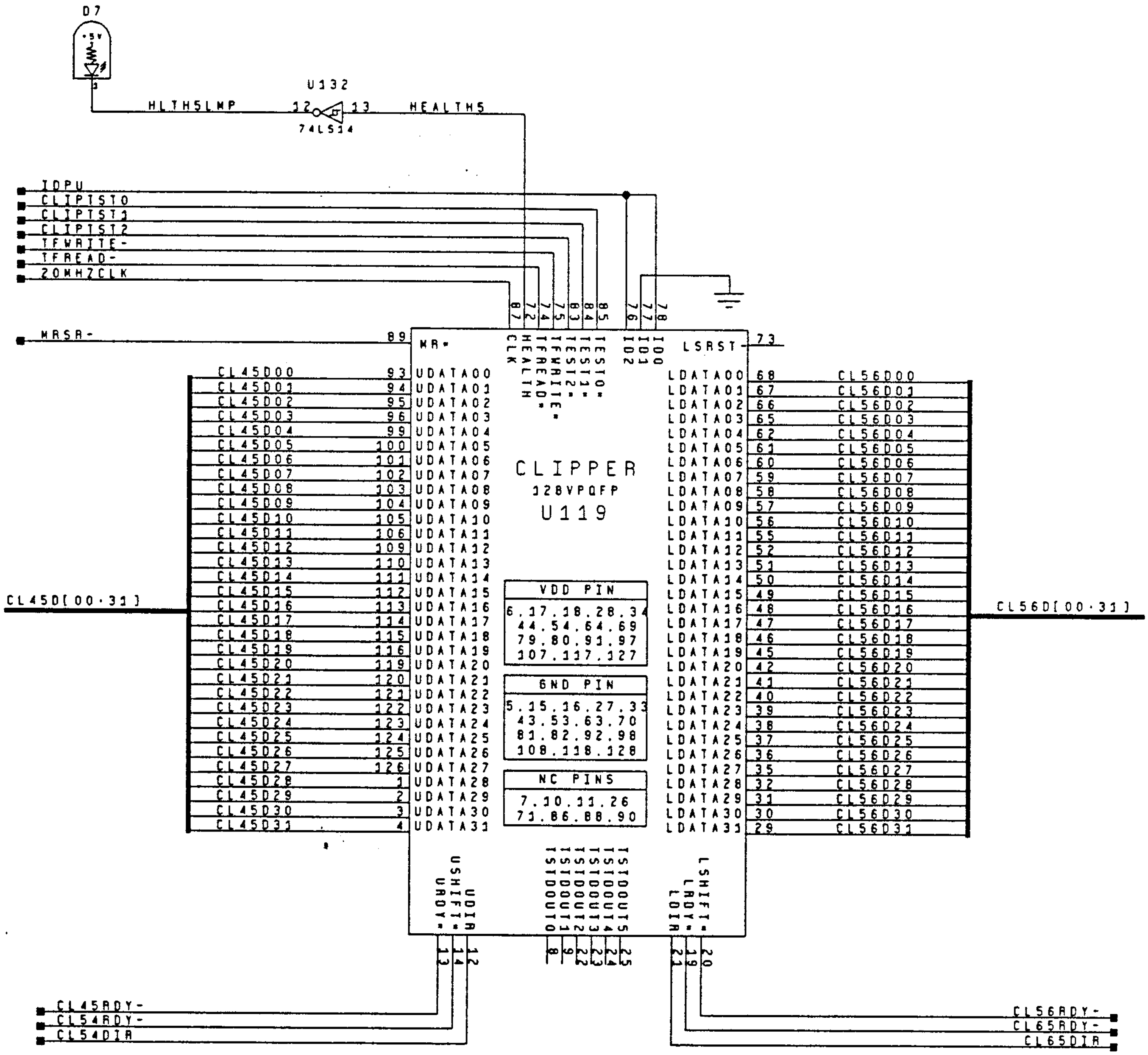
MICROPROSE Games
380 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER: DAVID J. BELLAMY	DATE
CHECKER	DATE
ENGINEER: DOUGLAS FROME	DATE
APPROVAL: [signature]	DATE: 1/4/91
APPROVAL: [signature]	DATE: 1/14/91

MICROPROSE GAMES
380 LAKEFRONT DR. HUNT VALLEY, MD 21030

TITLE
VVGB
CLIPPER ASIC 4
$X \geq X_{MIN}$

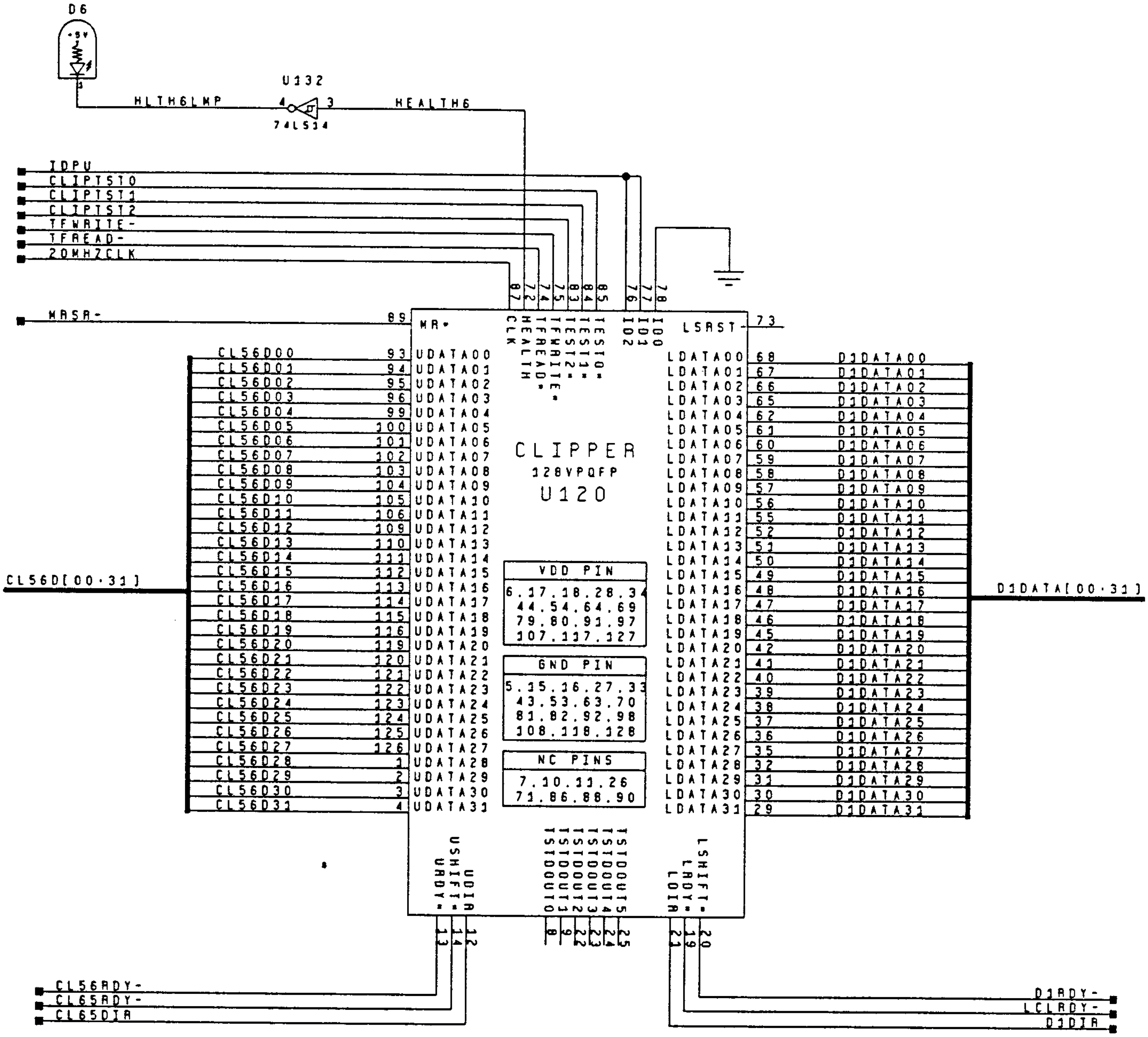
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REV
RELEASE
DATE 12-17-1990_9:11
SHEET 13 OF 27



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

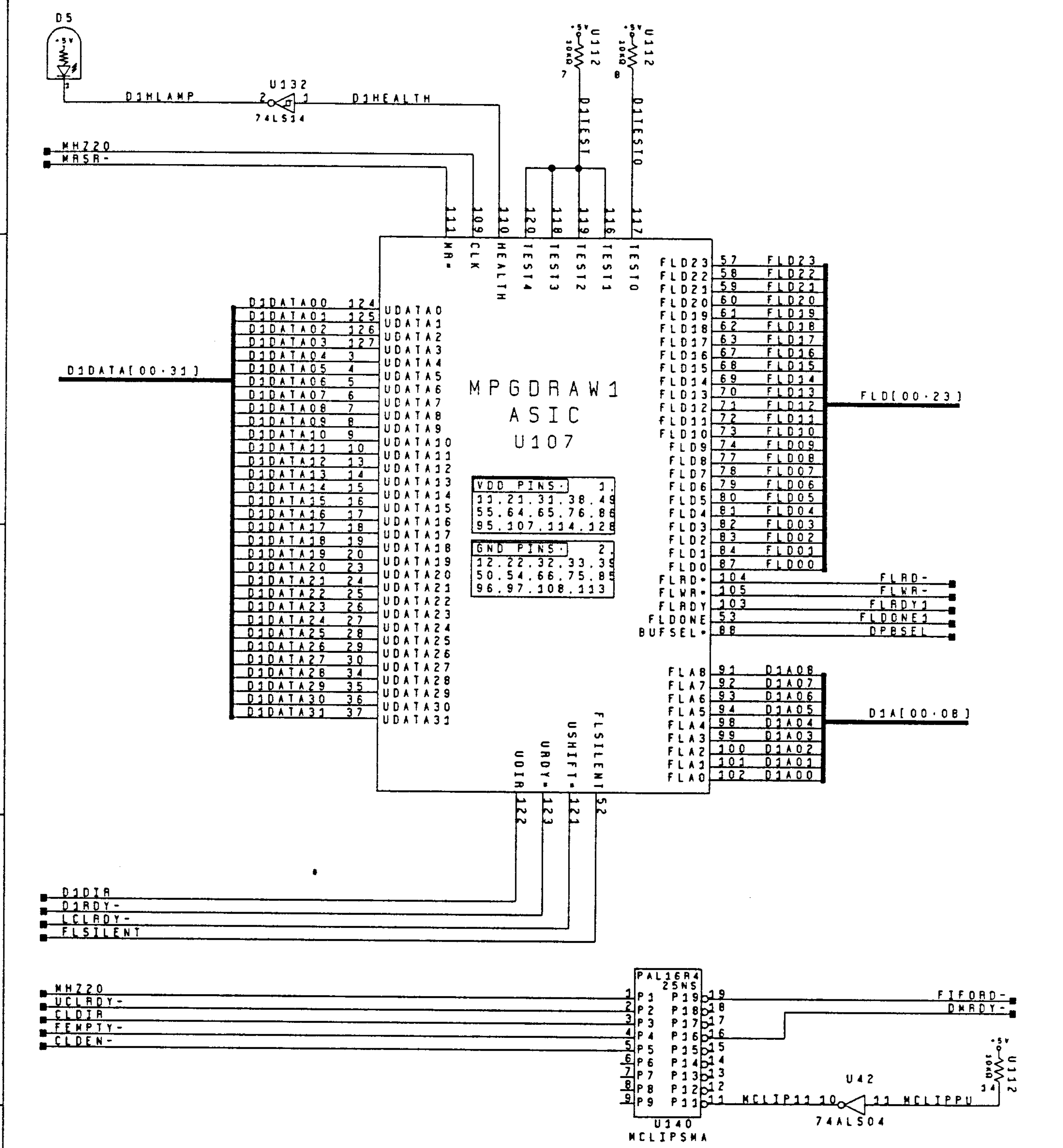
DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES, 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER	DATE	TITLE: VVGB CLIPPER ASIC 5 $X \leq X_{MAX}$
ENGINEER: DOUGLAS FRONE	DATE	
APPROVAL	DATE 1/4/91	SIZE C; DRAWING NUMBER DW-00011C-0013-03
APPROVAL	DATE 1/4/91	REV; RELEASE
		DATE 12-17-1990_9:12; SHEET 14 OF 27



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER	DATE	TITLE: VVGB CLIPPER ASIC 6 $Y \geq Y_{MIN}$
ENGINEER: DOUGLAS FROME	DATE	
APPROVAL: [signature]	DATE: 1/4/91	SIZE: C — DRAWING NUMBER: DW-00011C-0013-03
APPROVAL: [signature]	DATE: 1/14/91	REV — RELEASE
		DATE 12-37-1990_9:13 — SHEET 15 OF 27



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

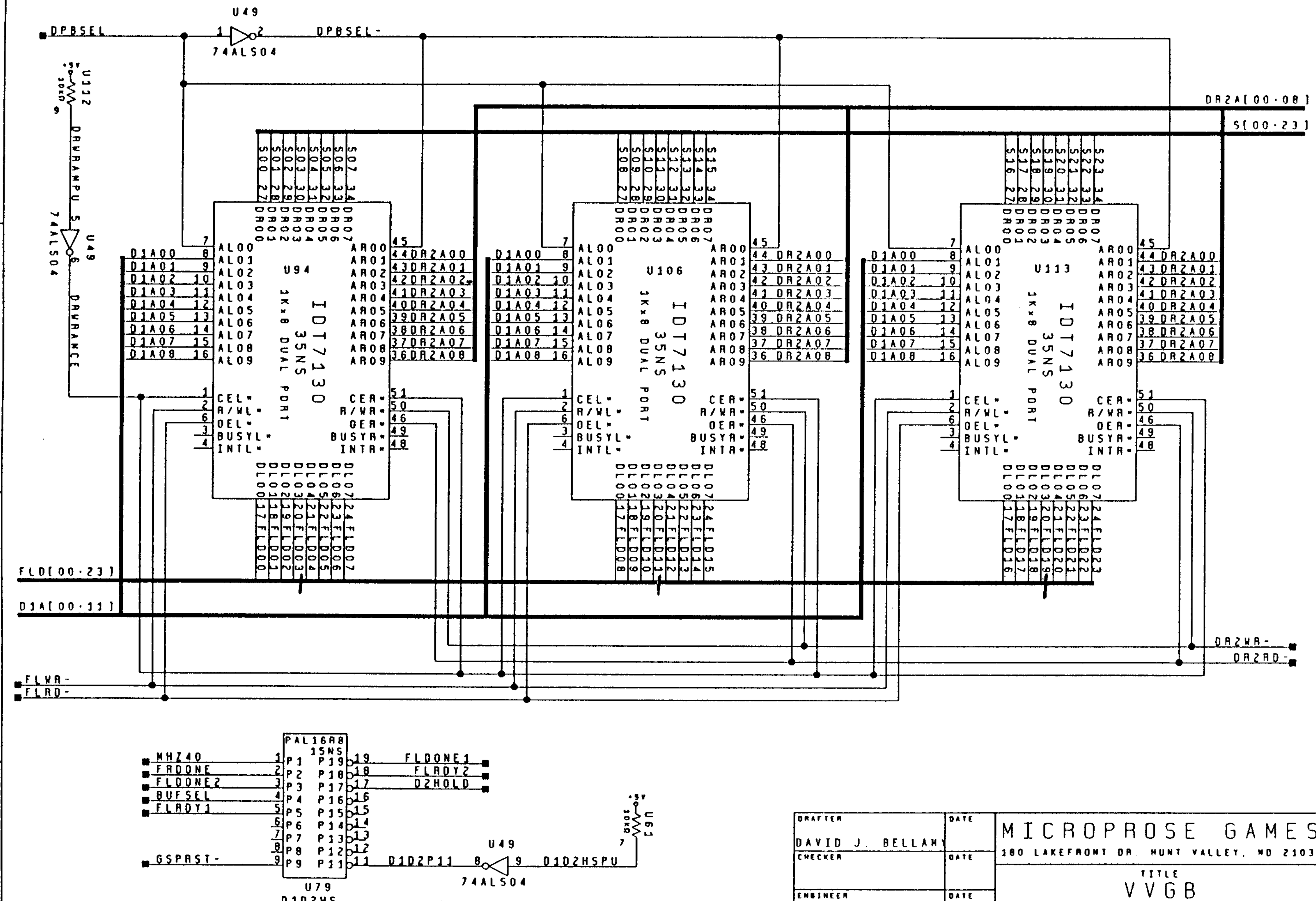
MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER: DAVID J. BELLAMY	DATE
CHECKER	DATE
ENGINEER: DOUGLAS FROME	DATE
APPROVAL	DATE: 1/4/91
APPROVAL	DATE: 1/4/91

MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

TITLE
VVGB
DRAW ONE ASIC

SIZE: C
DRAWING NUMBER: DW-00011C-0013-03
REV
RELEASE
DATE 12-17-1990_10:05
SHEET 16 OF 27



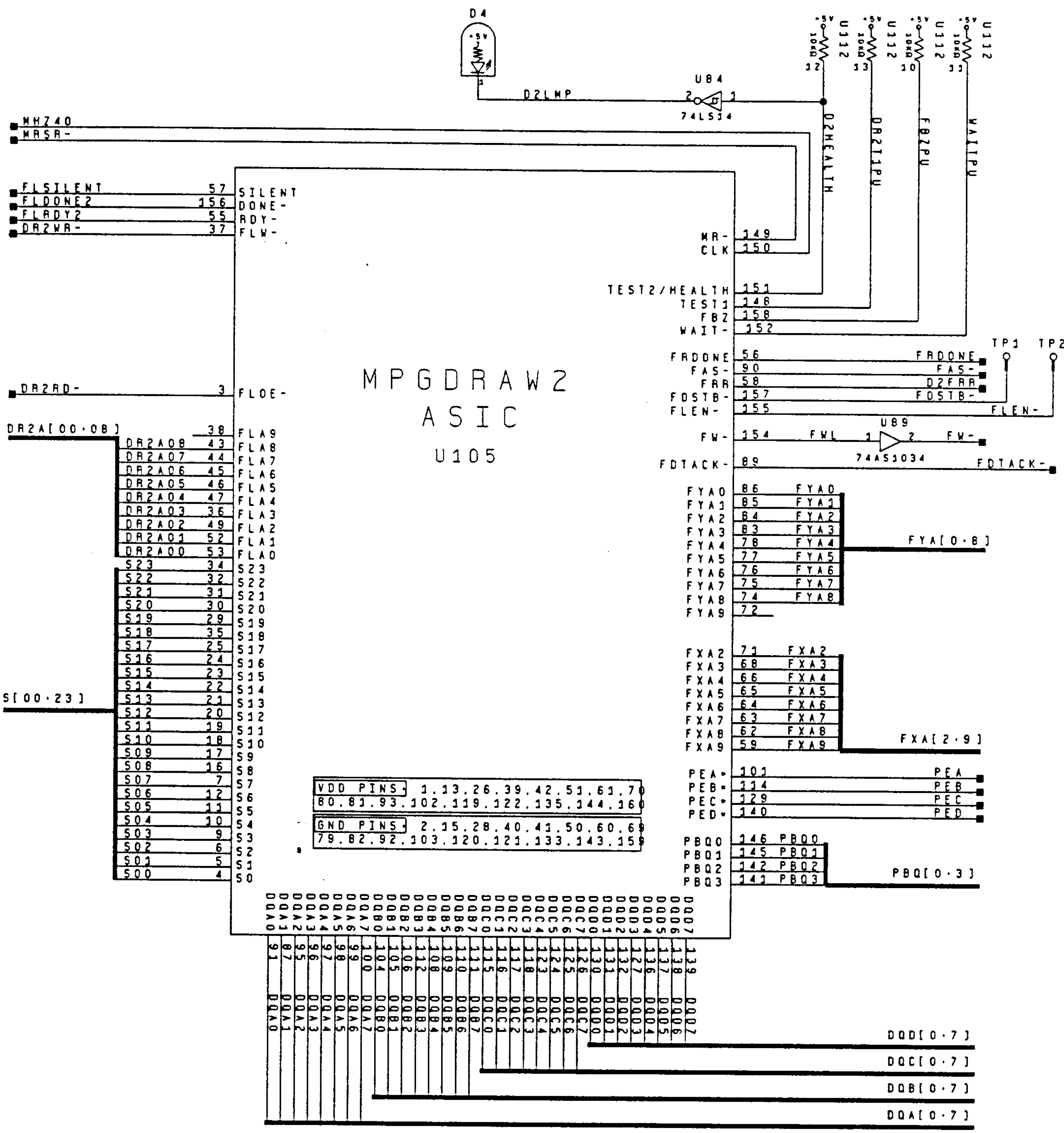
DRAFTER	DATE
DAVID J. BELLAMY	
CHECKER	DATE
ENGINEER	DATE
DOUGLAS CROME	
APPROVAL	DATE 1/4/91
APPROVAL	DATE 1/11/91

MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

TITLE
VVGB
DRAW ASICS DUAL PORT BUFFER RAM

SIZE: C | DRAWING NUMBER: DW-00011C-0013-03 | REV | RELEASE

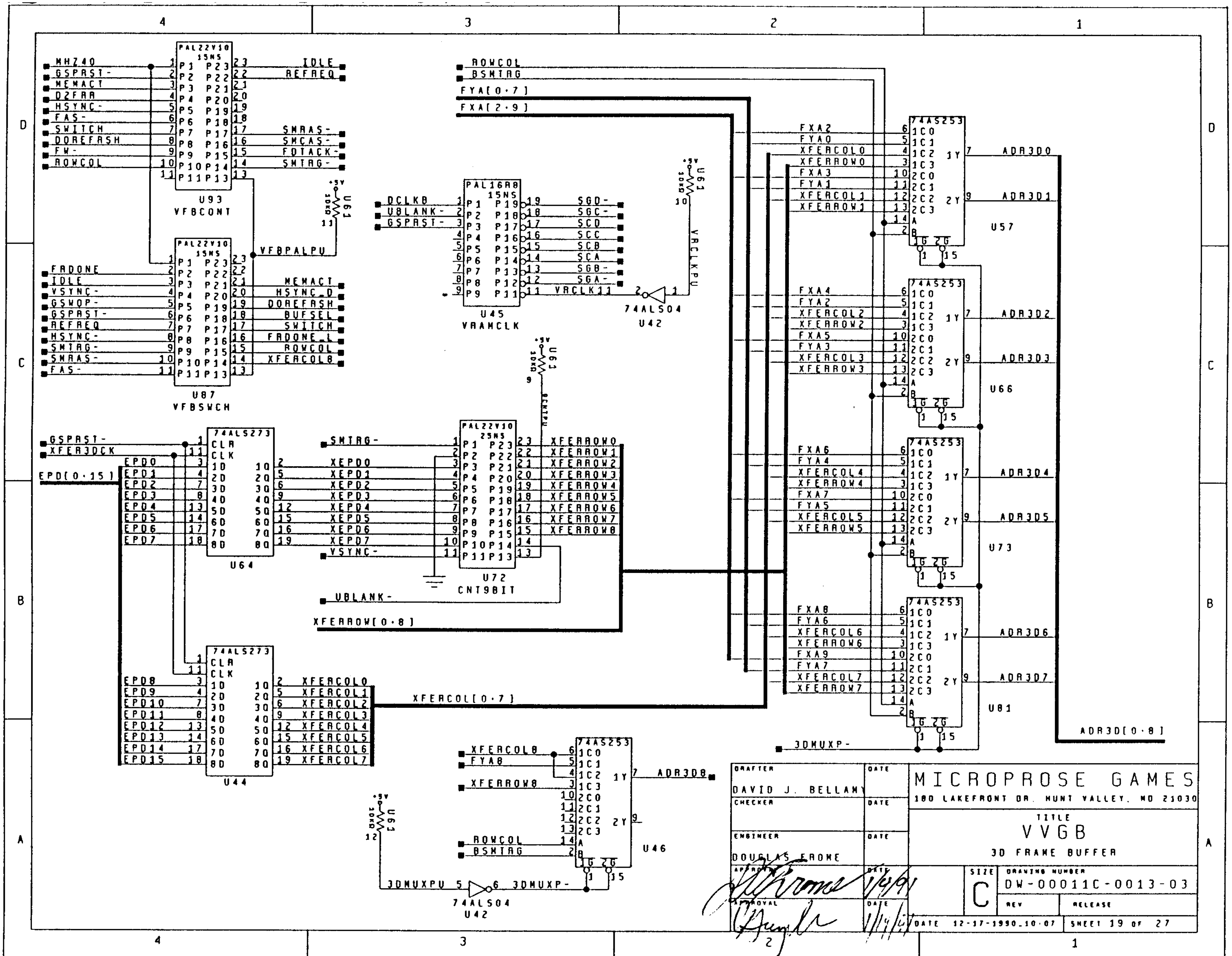
DATE 12-17-1990_10:05 | SHEET 17 OF 27



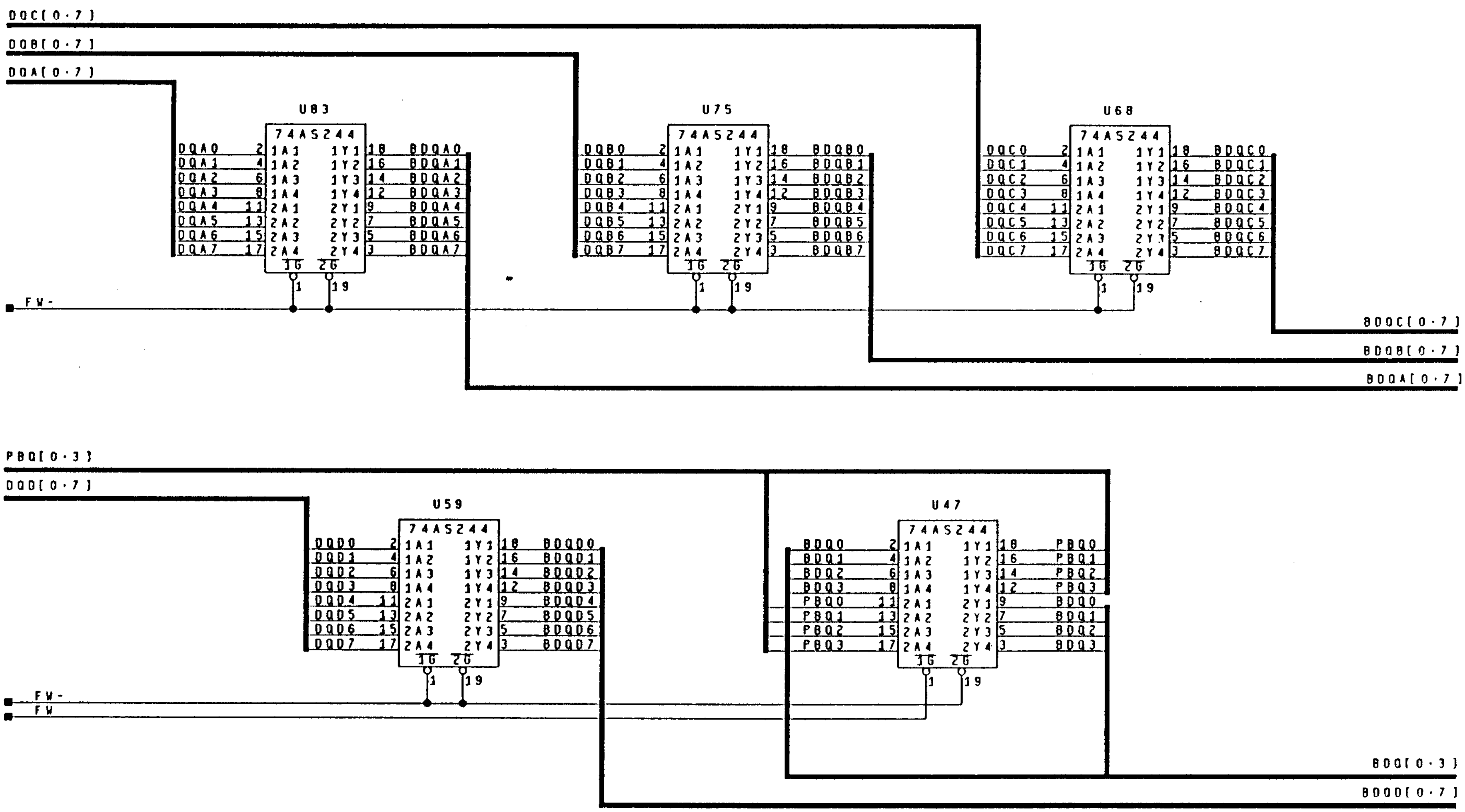
COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER	DATE	TITLE VVGB DRAW2 ASIC	
ENGINEER: DOUGLAS FROME	DATE		
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		DATE 12-17-1990_10:06	SHEET 18 OF 27



MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030
TITLE
VVGB
3D FRAME BUFFER
DRAFTER
DAVID J. BELLAMY
CHECKER
ENGINEER
DOUGLAS FROME
APPROVAL
SIZE
C
DRAWING NUMBER
DW-00011C-0013-03
REV
RELEASE
DATE 12-17-1990_10:07
SHEET 19 OF 27
U93
VFBCONT
U87
VFBSWCH
U45
VRAMCLK
U42
74ALS04
U64
U44
U72
CNT9BIT
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COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

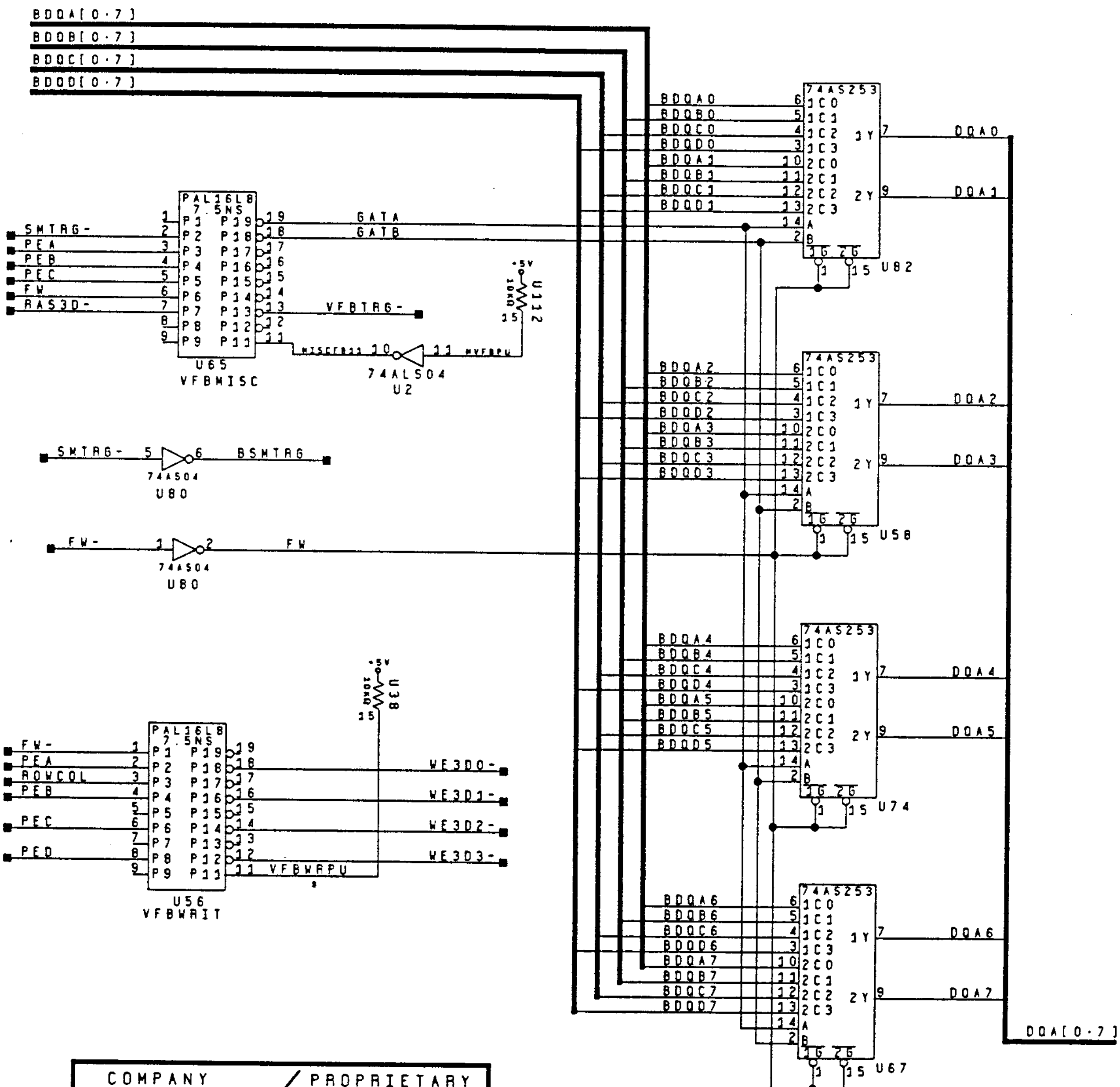
MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER: DAVID J. BELLAMY	DATE
CHECKER	DATE
ENGINEER: DOUGLAS FROME	DATE
APPROVAL	DATE 1/4/91
APPROVAL	DATE 1/4/91

MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

TITLE: VVGB
3D FRAME DATA BUS BUFFERS

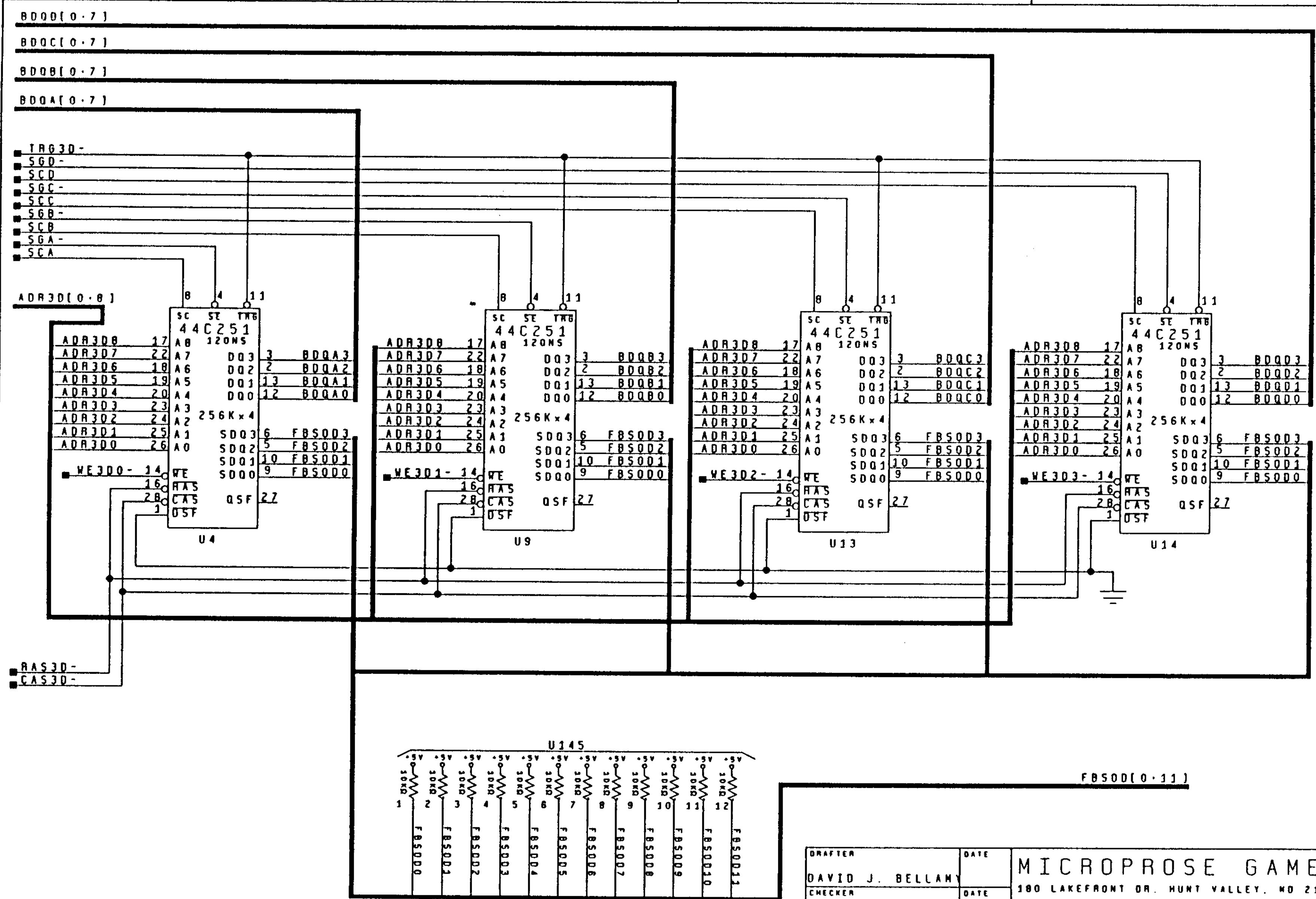
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REV
RELEASE
DATE 12-17-1990_10:07
SHEET 20 OF 27



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
380 LAKEFRONT DR. HUNT VALLEY, MD 21030

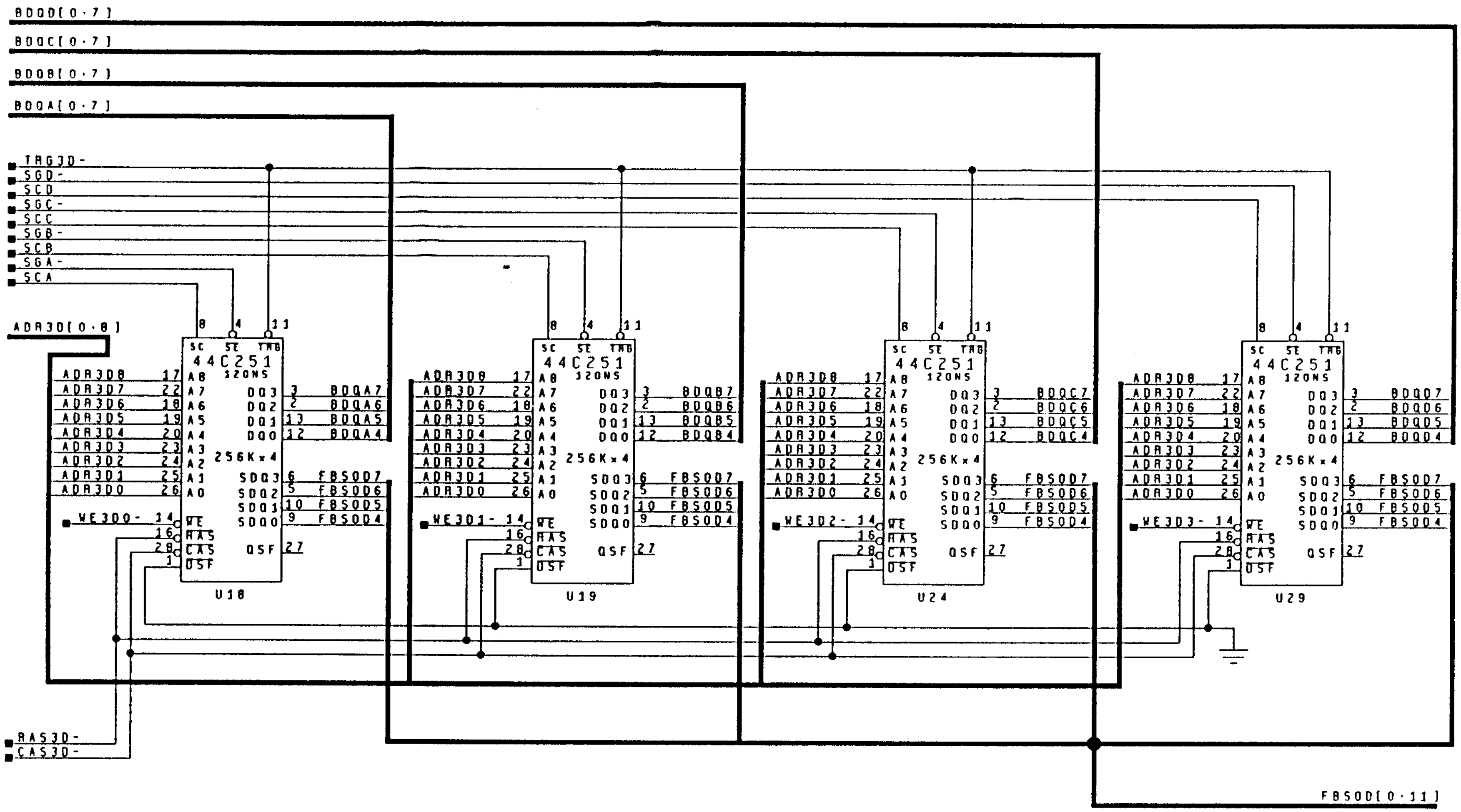
DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES 380 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER	DATE	TITLE VVGB VIDEO FRAME BUFFER READBACK
ENGINEER: DOUGLAS FROME	DATE	
APPROVAL: [signature]	DATE: 1/4/91	SIZE: C — DRAWING NUMBER: DW-00011C-0013-03
APPROVAL: [signature]	DATE: 1/14/91	REV — RELEASE
		DATE 12-17-1990_10:09 — SHEET 21 OF 27



COMPANY CONFIDENTIAL	PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER	DATE	TITLE VVGB 3D FRAME BUFFER MEMORY
ENGINEER: DOUGLAS FROME	DATE	
APPROVAL: [signature]	DATE: 1/4/91	SIZE: C — DRAWING NUMBER: DW-00011C-0013-03
APPROVAL: [signature]	DATE: 1/4/91	REV — RELEASE
		DATE 1-2-1991_8:24 — SHEET 22 OF 27



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR, HUNT VALLEY, MD 21030

DRAFTER: DAVID J. BELLAMY	DATE
CHECKER	DATE
ENGINEER: DOUGLAS FROME	DATE
APPROVAL	DATE 1/4/91
APPROVAL	DATE 1/4/91

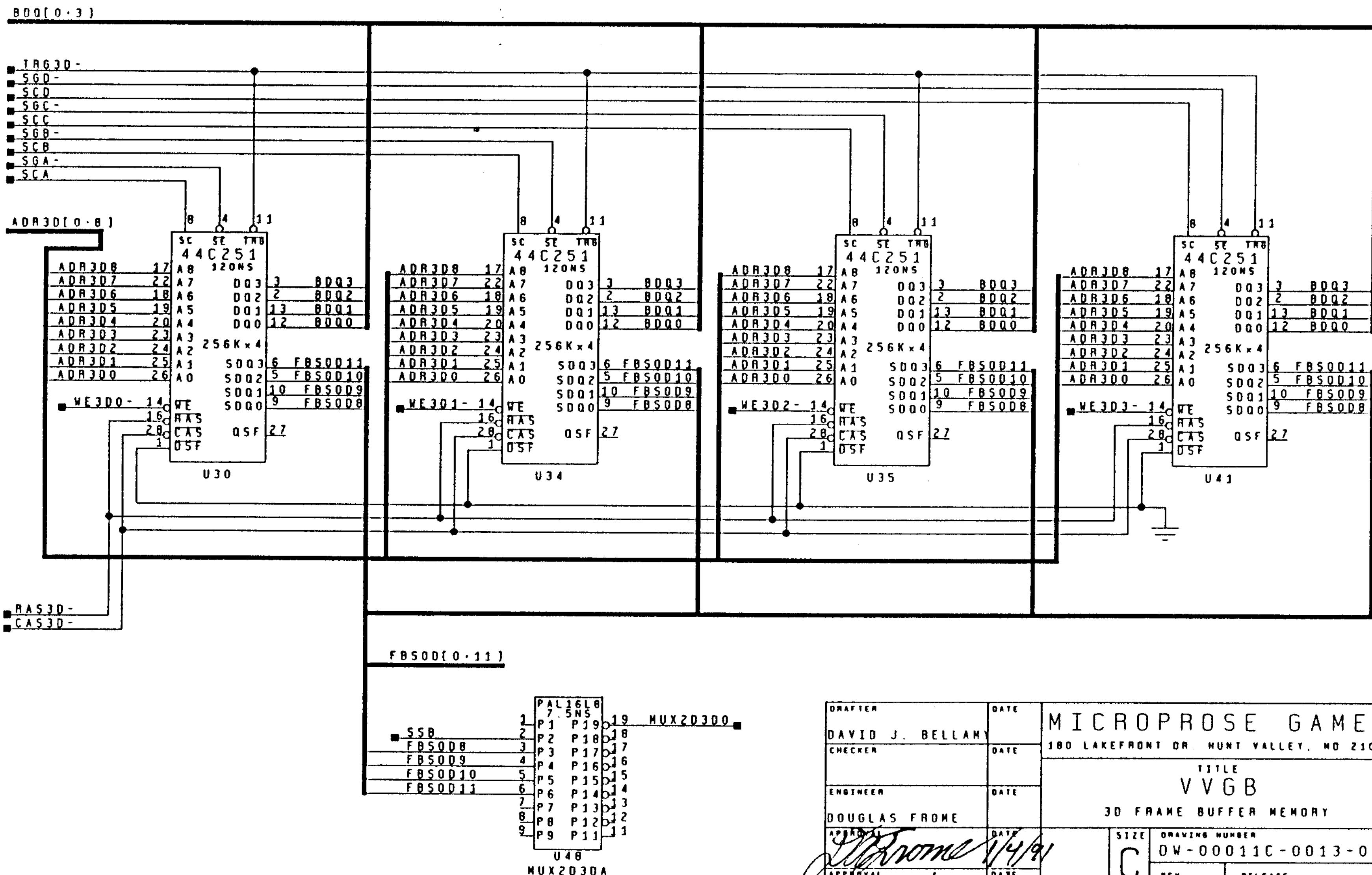
MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

TITLE
VVGB
3D FRAME BUFFER MEMORY

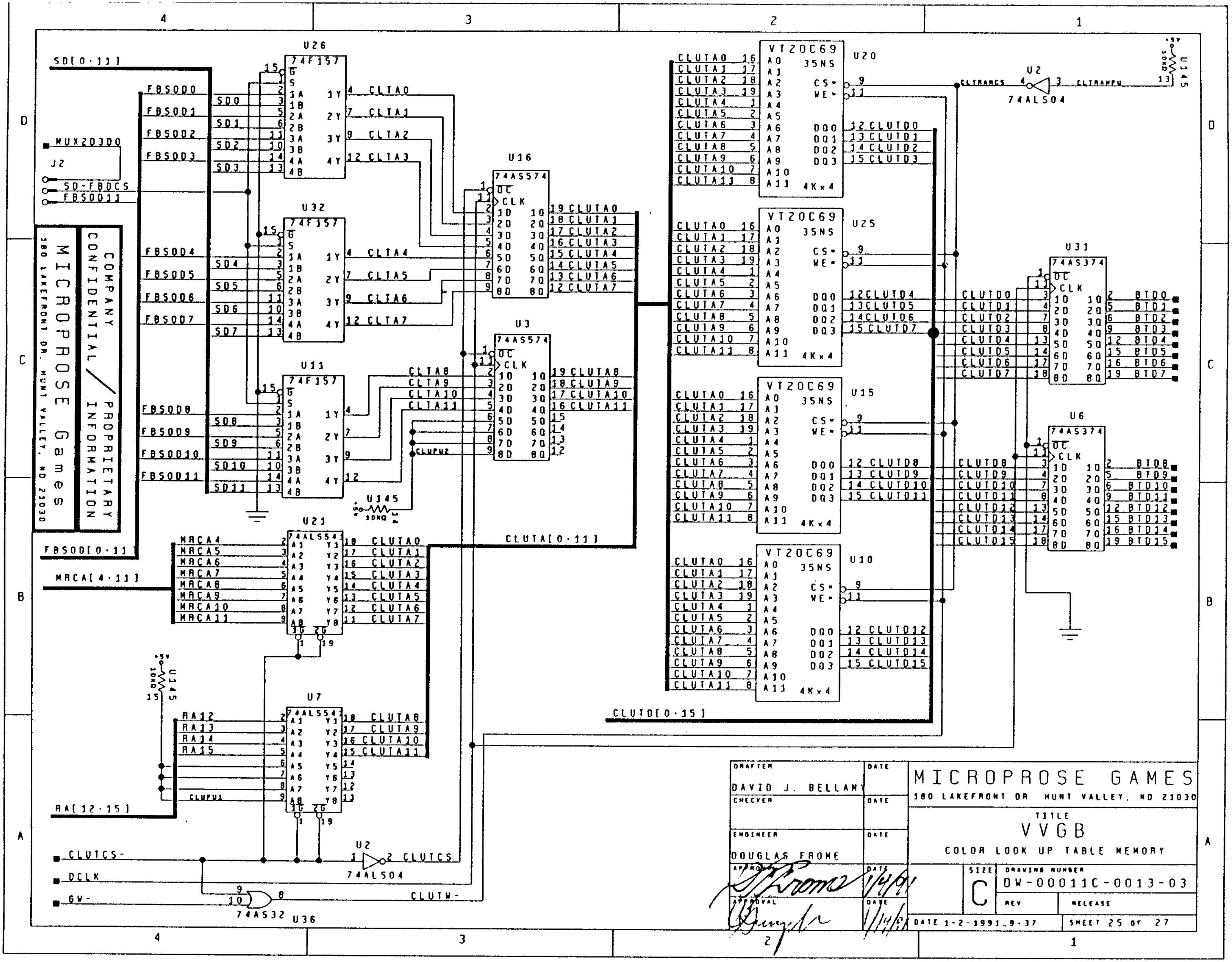
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REV — RELEASE
DATE 1-2-1991_8:33 — SHEET 23 OF 27

COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030



DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER	DATE	TITLE: VVGB 3D FRAME BUFFER MEMORY	
ENGINEER: DOUGLAS FROME	DATE		
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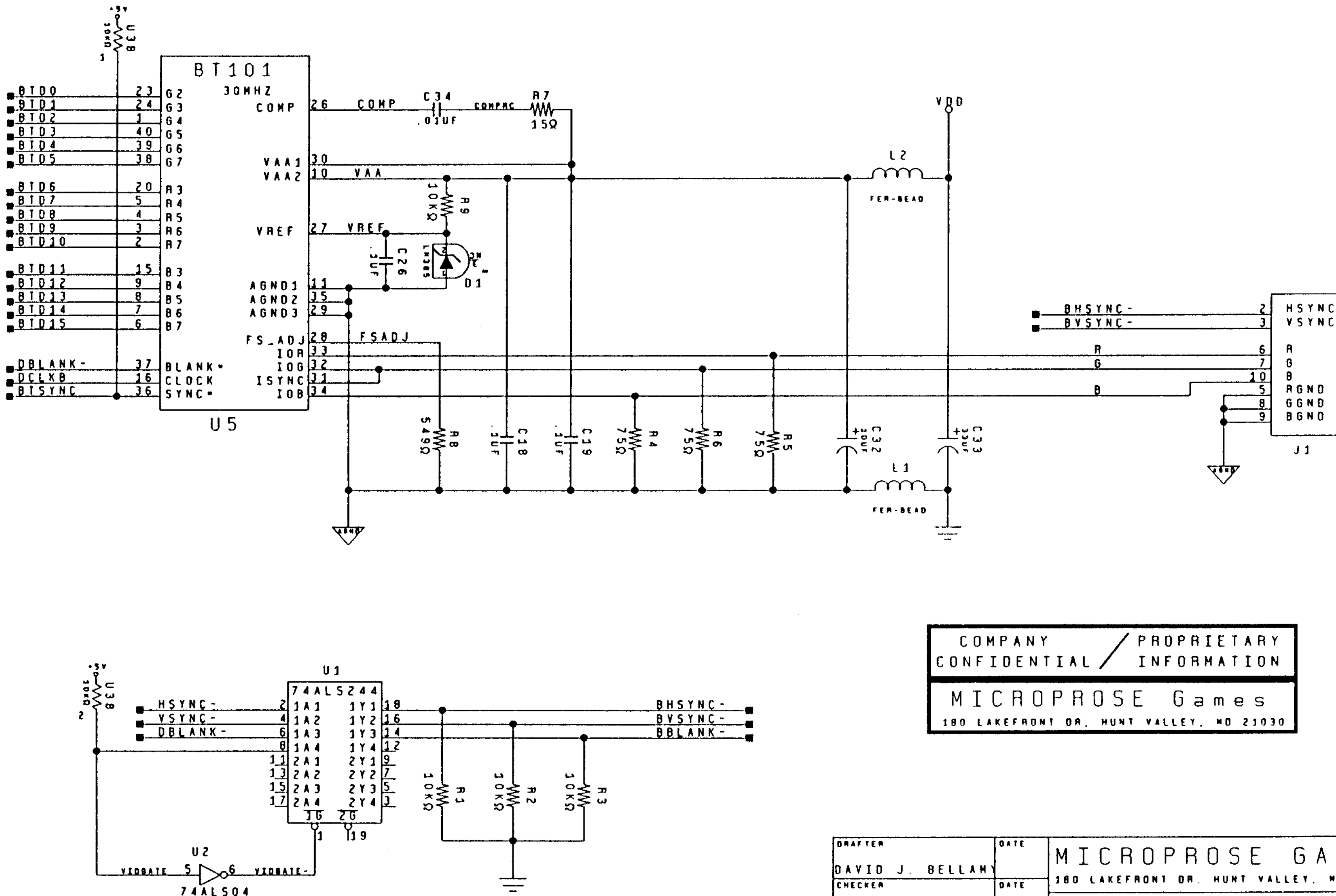


DRAFTER: DAVID J. BELLAMY	DATE
CHECKER	DATE
ENGINEER: DOUGLAS FROME	DATE
APPROVAL	DATE 1/4/91
APPROVAL	DATE 1/14/91

MICROPROSE GAMES
180 LAKEFRONT DR HUNT VALLEY, MD 21030

TITLE
VVGB
COLOR LOOK UP TABLE MEMORY

SIZE: C
DRAWING NUMBER: DW-00011C-0013-03
REV
RELEASE
DATE 1-2-1991_9:37
SHEET 25 OF 27



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

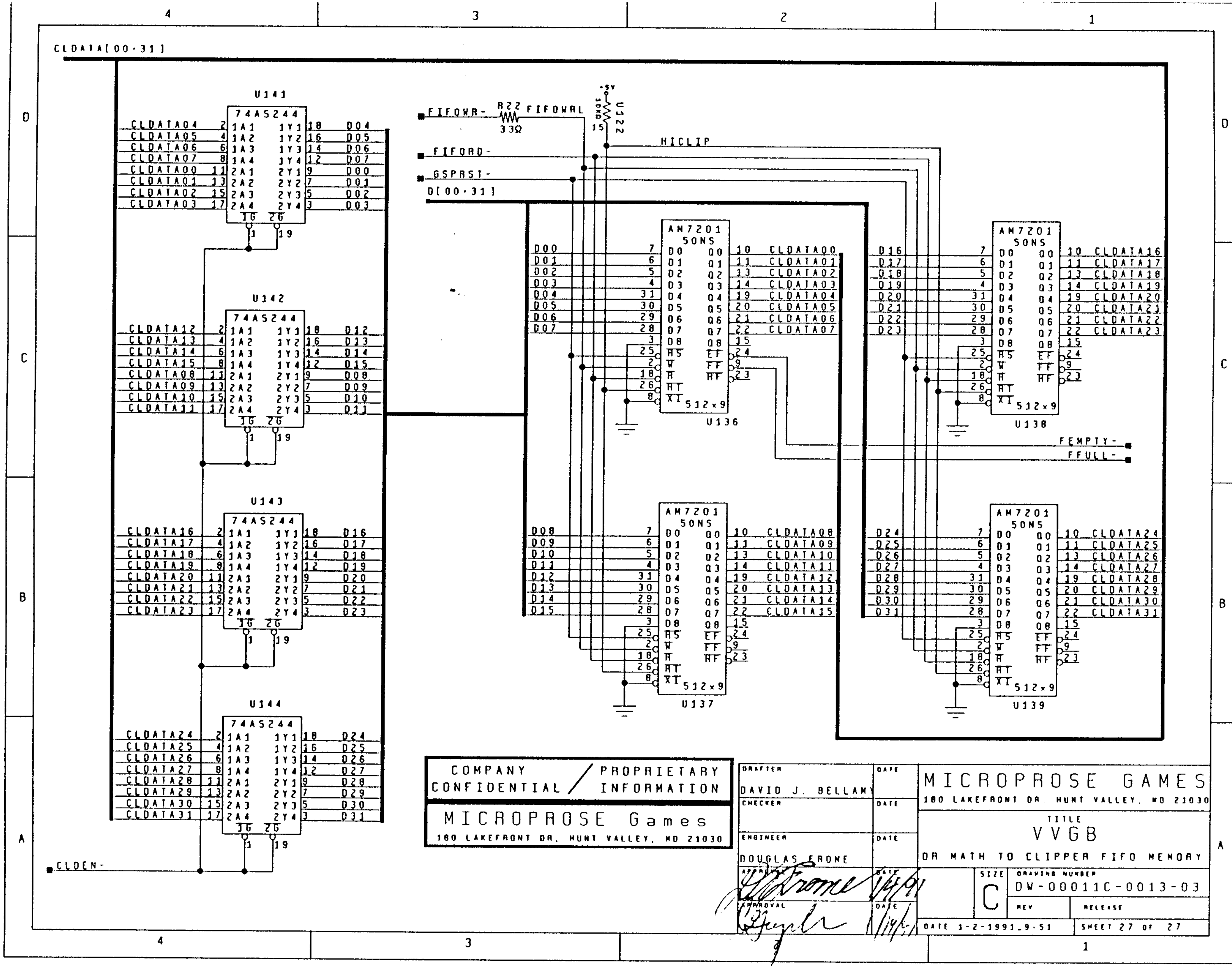
MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER: DAVID J. BELLAMY	DATE
CHECKER	DATE
ENGINEER: DOUGLAS FROME	DATE
APPROVAL: [signature]	DATE: 1/14/91
APPROVAL: [signature]	DATE: 1/14/91

MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

TITLE
VVGB
VIDEO DAC

SIZE: C
DRAWING NUMBER: DW-00011C-0013-03
REV: A
RELEASE
DATE 1-2-1991_9:38
SHEET 26 OF 27



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER	DAVID J. BELLAMY
CHECKER	
ENGINEER	DOUGLAS FROME
APPROVAL	[signature] 1/4/91
APPROVAL	[signature] 1/14/91

MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

TITLE
VVGB
DR MATH TO CLIPPER FIFO MEMORY

SIZE C — DRAWING NUMBER DW-00011C-0013-03

REV — RELEASE

DATE 1-2-1991_9:51 — SHEET 27 OF 27

BILL OF MATERIALS
VIDEO GRAPHICS P.C.B.
ASSEMBLY: A10-00003-003

DATE	ECN	REV	SHEET NUMBER 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
12-07-90	ECN148	A	A							A																	
12-19-90	ECN161	B	B						B																		

COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DRIVE, HUNT VALLEY, MD 21030	
CHECKER	DATE		
ENGINEER DOUGLAS FROME	DATE	TITLE BILL OF MATERIALS VIDEO GRAPHICS P.C.B. WITH VLSI CLIPPERS A10-00003-003	DWG NO PL-00011A-0013-03 REV B
APPROVAL D. Frome	DATE 1/15/91		DATE 1-15-1991_14·17 A
APPROVAL	DATE		SHEET 1 OF 8

ITEM	QTY	VENDOR PART NUMBER / REF. DES.	PART DESC	VALUE	MPG P/N
1 *	4	AM7201-50JC U136,U137,U138,U139	512x9FIFO	50NS	222-00004-450
2	1	71922-010 J1	2X5HEADER	.100"	610-00800-010
3	3	11C1210X7R104K050NT C18,C19,C26	SMTCERCAP	0.1UF	401-02002-104
4	1	LM385BZ-1.2 D1	ZENER	1.2V	301-00001-012
5	1	11C1210X7R103K050NT C34	SMTCERCAP	0.01UF	401-02002-103
6	1	293D336X9016D2T C33	SMTTANTCAP	33UF	420-00163-336
7	1	BT101KC30 U5	VIDEODAC	30MHZ	245-00001-230
8	2	2743019446 L2,L1	FERRITEBD	75 OHM	595-00001-100
9	1	293D106X9016C2T C32	SMTTANTCAP	10UF	420-00162-106
10	1	CCF-50 15R0F R7	1%MFRES	15 OHM	503-00001-150
11	1	CCF-50 5490F R8	1%MFRES	549 OHM	503-00001-551
12	3	CCF-50 75R0F R6,R5,R4	1%MFRES	75 OHM	503-00001-750
13	4	CCF-50 1002F R9,R3,R2,R1	1%MFRES	10KOHM	503-00001-103
14	2	SN74ALS541N U7,U21	OCTDRVRS		200-00541-200
15	3	MC74F157AN U11,U26,U32	QUAD2:1MUX		203-00157-200
16	1	GAL16V8-15LP U65	VFBMISCA	15 NS	120-00002-010
17	2	SN74AS374N U6,U31	OCTREGISTER		201-00374-200

ITEM		QTY	VENDOR PART NUMBER REF. DES.	PART DESC	VALUE	MPG P/N
18		2	SN74AS574N U3,U16	OCTREGISTER		201-00574-200
19	*	4	VT20C69-35PC U10,U15,U20,U25	4Kx4SRAM	35NS	221-00002-235
20						
21		1	AmPAL16L8-7CN U56	VFBWRITC	7.5 NS	120-00002-211
22		1	SN74AS32N U36	HEX2-IN'OR'		201-00032-200
23		9	SN74AS244DW U47,U59,U68,U75,U83,U141,U143,U144,U142	SMTOCTBUFFERS		201-00244-100
24		1	GAL16V8-15LP U45	VRAMCLKA	15NS	120-00002-001
25		1	GAL22V10-15LP U93	VFBCONTA	15NS	120-00002-002
26		1	GAL22V10-15LP U87	VFBSWCHA	15NS	120-00002-003
27		9	SN74AS253DW U46,U57,U58,U67,U66,U73,U74,U81,U82	SMTDUAL4:1MUX		201-00253-100
28		1	GAL22V10-25LP U72	CNT9BITA	25NS	120-00002-004
29	*	1	MPGDRAW2 U105	DRAW2ASIC	40MHZ	100-TB001-340
30		1	SN74AS1034AN U89	HEXDRIVER		201-01034-200
31	*	3	IDT7130SA-35J U94,U106,U113	1Kx8DPSRAM	35NS	222-00002-435
32		1	GAL16V8-15LP U79	D1D2HSA	15NS	120-00002-005
33		1	GAL16V8-25LP U140	MCLIPSMA	25NS	120-00002-006
34	*	1	MPGDRAW1 U107	DRAW1ASIC	20MHZ	100-PK001-320
35	*	6	MPGCLIPPER U118,U119,U120,U127,U128,U129	CLIPPERASIC	20MHZ	100-MW001-320

ITEM		QTY	VENDOR PART NUMBER REF. DES.	PART DESC	VALUE	MPG P/N
36	*	20	HM534251ZP-12 U4,U8,U9,U12,U13,U14,U17,U18,U19,U22,U23,U25,U27, U28,U29,U30,U33,U34,U35,U41	256Kx4VRAM	120NS	222-00006-612
37		1	SN74ALS2541N U39	OCTDRVRW/SERRES		200-02541-200
38	*	4	TMS44C256-12N U37,U43,U50,U54	256Kx4DRAM	120NS	220-00002-212
39		1	AM29C863PC U71	9BITXCVR		235-00005-200
40		2	SN74ALS244ADW U1,U62	SMTOCTBUFFERS		200-00244-100
41		1	AM29C823ASC U78	SMT9BITLATCH		235-00004-100
42		1	GAL16V8-15LP U40	VRAM_SGA	15NS	120-00002-007
43		4	SN74ALS273N U44,U51,U55,U64	OCTREGISTERS		200-00273-200
44		1	GAL22V10-15LP U77	GADRDC1A	15NS	120-00002-008
45		1	AM29841APC U63	10BITLATCHES		235-00008-100
46		1	GAL22V10-25LP U86	GADRDC0A	25NS	120-00002-009
47						
48		1	LT1081-CN U60	RS232DRVR		235-00001-200
49		1	22-05-7048 J3	MOLEX4PIN	.100"	610-00601-004
50		4	293D105X0016A2T C68,C69,C70,C71	SMTTANTCAP	1UF	420-00060-105
51						
52	*	1	SCN2651CC1N28 U69	UART		240-00002-200
53		6	SN74ALS245ADW U98,U99,U102,U103,U109,U110	SMTOCTXCVR		200-00245-100

ITEM	QTY	VENDOR PART NUMBER REF. DES.	PART DESC	VALUE	MPG P/N
54 D*	1	TMS34010FNL-40 U115	68PLCCGSP	40MHZ	135-34010-440
55	1	SN74ALS74N U53	DUAL DFLOPS		200-00074-200
56	1	SN74ALS08N U70	HEX2-IN'AND'		200-00008-200
57	3	SN74ALS373N U76,U85,U91	OCTLATCHES		200-00373-200
58	1	68001-502 J8,[J6,J10]	2PINJUMPER	.100"	610-00002-002
59	0	68001-503 [J2,J4,J5,J7,J9]	3PINJUMPER	.100"	610-00002-003
60	1	SN74AS04N U80	HEXINVERTER		201-00004-200
61	1	SN74LS393N U123	DUAL4BITBICNTR		202-00393-200
62	1	SN74AS74N U116	DUALDFLOPS		201-00074-200
63	6	CCF-07 100G R14,R15,R17,R18,R19,R21	2%MFRESISTOR	10 OHM	503-00002-100
64	1	XO-43D-40 U104	OSCILLATOR	40MHZ	290-00001-040
65	1	1N746A D2	ZENER	3.3V	301-00002-033
66	1	KSA1A211 SW1	PBSWITCH		625-00002-001
67	1	CCF-07 102G R10	2%MFRESISTOR	1KOHM	503-00002-102
68	1	CCF-07 820G R12	2%MFRESISTOR	82 OHM	503-00002-820
69	4	CCF-07 103G R11,R13,R16,R20	2%MFRESISTOR	10KOHM	503-00002-103
70	1	1N914 D3	DIODE		300-00002-003
71	1	LM311N U90	VOLTCOMP		280-00002-200

ITEM	QTY	VENDOR PART NUMBER REF. DES.	PART DESC	VALUE	MPG P/N
72	1	173D335X0020V C100	AXTANTCAP	3.3UF	422-00062-335
73	3	SN74LS14N U84,U132,U135	HEXSTINVERT		202-00014-200
74	3	SN74ALS04BN U2,U42,U49	HEXINVERTERS		200-00004-200
75	1	SN74ALS157N U125	QUAD2:1MUX		200-00157-200
76	0	X0-43D-50 U92	OSCILLATOR	50MHZ	290-00001-050
77	0	XO-43B-20 U131	OSCILLATOR	20MHZ	290-00001-020
78	4	SN74AS1004AN U100,U111,U117,U126	HEXINVDRVRS		201-01004-200
79	14	7-0805G-5 TP2,TP1,TP5,TP4,TP15,TP14,TP13,TP12,TP11,TP10,TP9, TP8,TP7,TP6	TESTPIN		710-00001-001
80	5	836C103X2PE U38,U61,U112,U122,U145	SMTPULRESPAK	10KOHM	502-00001-103
81	1	ICTE-5 D14	ZENER	5.0V	300-00001-002
82	1 0	26-60-5100 09-52-3102 P2	MOLEX10PIN	.156"	610-00601-010 610-10600-010
83	8	TAJC156M010CR C3,C10,C58,C107,C123,C134,C154,C157	SMTTANTCAP	15UF	420-00002-156
84	88	11C1206Z5U104M050NT C1,C2,C4,C5,C7,C9,C13,C21,C28,C36,C41,C42,C45,C47,C48,C50,C52, C53,C54,C55,C56,C59,C60,C61,C63,C64,C65,C66,C67,C72,C73,C74, C75,C76,C77,C78,C79,C80,C81,C82,C83,C84,C85,C86,C87,C88,C89, C90,C91,C92,C93,C95,C96,C97,C98,C99,C101,C102,C103,C104,C106, C109,C110,C111,C113,C114,C115,C118,C119,C120,C124,C132,C133, C136,C137,C139,C140,C141,C143,C148,C153,C155,C156,C158,C159, C160,C161	SMTCERCAP	0.1UF	401-01000-104
85	10	HLMP3600 D4,D5,D6,D7,D8,D9,D10,D11,D12,D13	LED	RED	305-00003-002
86	1	71922-140 P3	2x20RACONNECTR	.100"	610-00900-040

ITEM	QTY	VENDOR PART NUMBER / REF. DES.	PART DESC	VALUE	MPG P/N
87	53	11C1206Z5U334M050NT C6,C11,C12,C14,C15,C16,C17,C20,C22,C23,C24,C25,C27,C29, C30,C31,C35,C37,C38,C39,C40,C43,C44,C46,C49,C51,C57,C62, C94,C105,C108,C112,C116,C117,C121,C125,C126,C127,C128, C129,C130,C131,C135,C138,C142,C144,C145,C146,C147,C149, C150,C151,C152	SMTCERCAP	0.33UF	401-02000-334
88 A*	1	AM27C010-155DC U101	128Kx8EPROM VGBK0BY0.001	150NS	110-00002-101
89 A*	1	AM27C010-155DC U108	128Kx8EPROM VGBK0BY1.001	150NS	110-00002-102
90 A*	1	AM27C010-155DC U114	128Kx8EPROM VGBK1BY0.001	150NS	110-00002-103
91 A*	1	AM27C010-155DC U97	128Kx8EPROM VGBK1BY1.001	150NS	110-00002-104
92 A*	1	AM27C010-305DC U124	128Kx8EPROM VGBK2BY0.001	300NS	110-00002-105
93 A*	1	AM27C010-305DC U121	128Kx8EPROM VGBK2BY1.001	300NS	110-00002-106
94 A*	1	AM27C010-305DC U130	128Kx8EPROM VGBK3BY0.001	300NS	110-00002-107
95 A*	1	AM27C010-305DC U133	128Kx8EPROM VGBK3BY1.001	300NS	110-00002-108
96 A	0	2-644018-2 **[UX97,UX101,UX108,UX114,UX121,UX124,UX130,UX133]**	32PINSOCKET	.600"	600-00003-632
97 B	0	ICO-324MTT **[UX72,UX77,UX86,UX87,UX93]**	24PINSOCKET	.300"	600-00001-324
98 C	5	ICO-320MTT UX40,UX45,UX65,UX79,UX140	20PINSOCKET	.300"	600-00001-320
99 D	1	PLCC-68-P-T UX115	68PLCCSOCKET		602-00001-068
100	1	68686-102 FOR J8	SHUNT		715-00001-001
101	0	SRS8-12-01	SPACER	.750"	700-00001-031

ITEM	QTY	VENDOR PART NUMBER REF. DES.	PART DESC	VALUE	MPG P/N
102	1	ZS5-120-02-L-D-615 P1	2x20CONNECTOR	.100"	610-00004-040
103	1	CCF-07 330G R22	2%MFRESISTOR	33 OHM	503-00002-330
104 **	0	AmPAL16L8-7CN U49	MUX2D3DA	7.5NS	120-00002-012

	398				

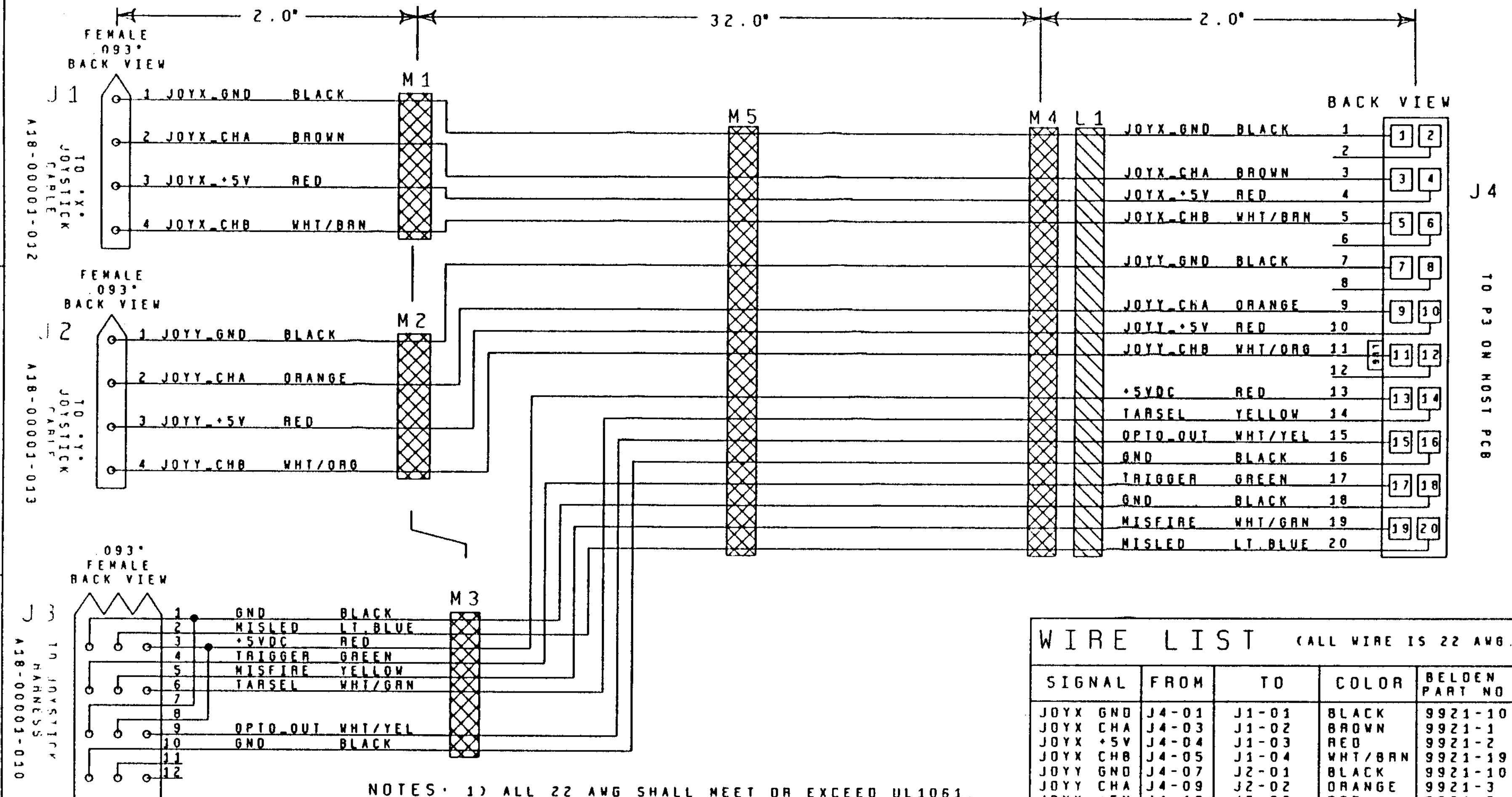
NOTES:

1. PARTS REQUIRING 0.33UF DECOUPLING CAPACITORS ARE DESIGNATED WITH AN ASTERISK (*) BETWEEN THE ITEM AND QTY COLUMNS.
2. PARTS REQUIRING SOCKETS ARE MARKED WITH A LETTER CORRESPONDING TO THE SOCKETS (SOCKETS ARE ITEMS 96 - 99).
3. ALL PARTS WITH A DOUBL ASTERISK (**) NEXT TO ITEM NUMBER ARE NOT POPULATED FOR THE CURRENT BUILD.

Dec 19, 1990

F15 CABLE AND HARNESS LIST

Drawing No.	Assembly No.	Name
DW-00014C-0002	A18-00001-002	JOYSTICK CABLE
DW-00014C-0003	A18-00001-003	PANEL CONTROL HARNESS
DW-00014C-0004	A18-00001-004	COIN DOOR
DW-00014C-0005	A18-00001-005	THROTTLE/PANEL
DW-00014C-0006	A18-00001-006	RS-232 CABLE
DW-00014C-0007	A18-00001-007	HOST TO VGB
DW-00014C-0008	A18-00001-008	LEFT SPEAKER CABLE
DW-00014C-0009	A18-00001-009	THROTTLE HARNESS
DW-00014C-0010	A18-00001-010	JOYSTICK HARNESS
DW-00014C-0011	A18-00001-011	RIGHT SPEAKER CABLE
DW-00014C-0012	A18-00002-001	DC POWER HARNESS
DW-00014C-0013		NOT USED
DW-00014C-0014	A18-00003-002	INPUT A.C. HARNESS
DW-00014C-0015	A18-00003-003	A.C. TRAY TO CABINET TOP
DW-00014C-0016	A18-00003-004	100 VOLT TRANSFORMER CABLE
DW-00014C-0017	A18-00003-005	120 VOLT TRANSFORMER CABLE
DW-00014C-0018	A18-00003-006	240 VOLT TRANSFORMER CABLE
DW-00014C-0019	A18-00003-007	TRANSFORMER ASSEMBLY
DW-00014C-0020	A18-00003-008	BILL ACCEPTOR CABLE
DW-00014C-0021		NOT USED
DW-00014C-0022		NOT USED
DW-00014C-0023	A18-00001-013	X JOYSTICK
DW-00014C-0024	A18-00001-012	Y JOYSTICK
DW-00014C-0025	A18-00003-010	DISPLAY CABLE
DW-00014C-0026	A18-00003-013	LOWER SHROUD HARNESS
DW-00014C-0027	A18-00002-002	D.C. FAN EXTENSION CABLE
DW-00014C-0028	A18-00003-014	MARQUEE A.C. LIGHT CONNECTOR
DW-00014C-0029	A18-00003-015	FLORESCENT LIGHT 'Y' CABLE
DW-00014C-0030	A18-00003-016	UPPER SHROUD HARNESS



NOTES:
1) ALL 22 AWG SHALL MEET OR EXCEED UL1061.
2) SECURE FERRITE BEAD L1 TO CABLE WITH A TIE WRAP.
3) TWO WIRES ARE CRIMPED IN PIN J3-7.
4) TWO WIRES ARE CRIMPED IN PIN J3-8.
5) TIE WRAP AT 2" INTERVALS.
6) ASSEMBLED CABLE IS MPG P/N A18-00001-002.

WIRE LIST (ALL WIRE IS 22 AWG.

SIGNAL	FROM	TO	COLOR	BELDEN PART NO
JOYX GND	J4-01	J1-01	BLACK	9921-10
JOYX CHA	J4-03	J1-02	BROWN	9921-1
JOYX +5V	J4-04	J1-03	RED	9921-2
JOYX CHB	J4-05	J1-04	WHT/BRN	9921-19
JOYY GND	J4-07	J2-01	BLACK	9921-10
JOYY CHA	J4-09	J2-02	ORANGE	9921-3
JOYY +5V	J4-10	J2-03	RED	9921-2
JOYY CHB	J4-11	J2-04	WHT/ORG	9921-20
+5V	J4-13	J3-03,08	RED	9921-2
TARG_SEL	J4-14	J3-06	YELLOW	9921-4
OPTO_OUT	J4-15	J3-09	WHT/YEL	9921-17
GND	J4-16	J3-10	BLACK	9921-10
TRIGGER	J4-17	J3-04	GREEN	9921-5
GND	J4-18	J3-01,07	BLACK	9921-10
MISSILE	J4-19	J3-05	WHT/GRN	9921-16
MISL_LED	J4-20	J3-02	LT_BLUE	9921-6

PART LIST

REFDE	MFG.	PART NO.	PIN NO.
J1	MOLEX	03-09-1042	02-09-5142
J2	MOLEX	03-09-1042	02-09-5142
J3	MOLEX	03-09-1126	02-09-5142
J4	MOLEX	14-57-1201	
L1	FAIR-RITE	2643665702	

MARKERS

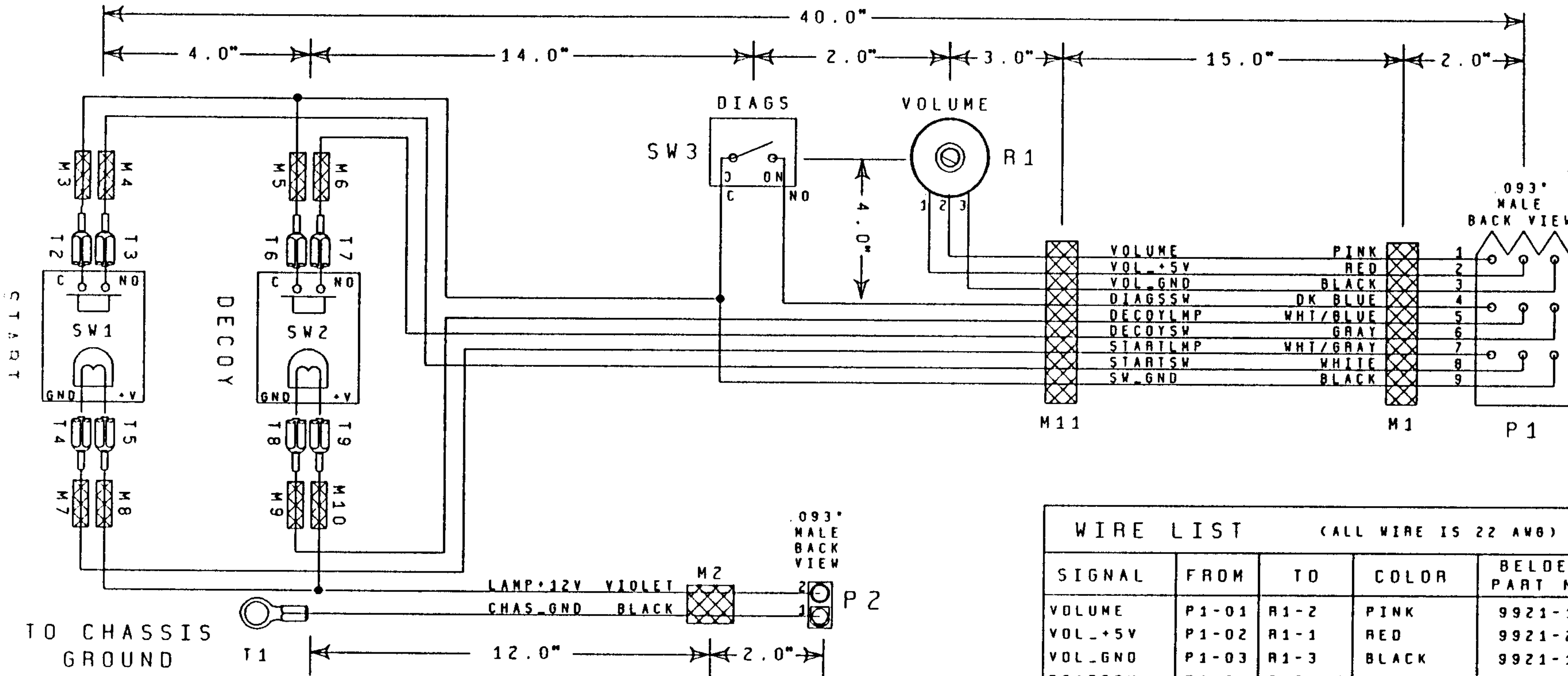
REF DES	MFG.	PART NO.	TEXT LINE 1	TEXT LINE 2	TEXT SIZE
M1	BRADY	HCPS.9-5008W	X JOY		.125"
M2	BRADY	HCPS 9-5008W	Y JOY		.125"
M3	BRADY	HCPS.9-8336W	JOYSTICK	SWITCHES	.125"
M4	BRADY	HCPS.9-1008W	HOST PCB	P3	.125"
M	BRADY	HCPS.9-1008W	HOST TO JOYSTICK	DW-00014C-0002-02	.125"

DRAFTER: DAVID J. BELLAMY	DATE:
CHECKER: [signature]	DATE: 12-17-90
ENGINEER: JAY G. McKIBBIN	DATE:
APPROVAL: [signature]	DATE: 12/18/90
APPROVAL:	DATE:

MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

TITLE
JOYSTICK CABLE HOST TO JOYSTICK

SIZE	DRAWING NUMBER	
C	DW-00014C-0002	
	REV -02	RELEASE CABLE 2
	DATE 12-17-1990_11:21	SHEET 1 OF 1



WIRE LIST (ALL WIRE IS 22 AWG)

SIGNAL	FROM	TO	COLOR	BELDEN PART NO
VOLUME	P1-01	R1-2	PINK	9921-12
VOL_+5V	P1-02	R1-1	RED	9921-2
VOL_GND	P1-03	R1-3	BLACK	9921-10
DIAGSSW	P1-04	SW3-NO	DK BLUE	9921-13
DECOYLAMP	P1-05	SW2-4	WHT/BLUE	9921-18
DECOYSW	P1-06	SW2-2	GRAY	9921-8
STARTLAMP	P1-07	T4	WHT/GRAY	9921-21
STARTSW	P1-08	T3	WHITE	9921-9
SW_GND	P1-09	SW3-C	BLACK	9921-10
	SW3-C	T6	BLACK	9921-10
	T6	T2	BLACK	9921-10
LAMP+12V	T5	T9	VIOLET	9921-7
	T9	P2-2	VIOLET	9921-7
CHAS_GND	P2-1	T1	BLACK	9921-10

NOTES:

1) ALL 22 AWG WIRE SHALL MEET OR EXCEED UL1061.
2) SW1 & SW2 ARE SHOWN FOR REFERENCE ONLY.
3) PLACE MARKERS M3 - M10 1" FROM PUSH-ON TERMINALS (T2 - T9).
4) TIE WRAP AT 4 " INTERVALS.
5) MARKER M11 HAS TWO LINES OF TEXT.
6) BREAKOUT DISTANCE FOR SW3 & R1 ARE THE SAME.
7) ASSEMBLED HARNESS IS MPG P/N A18-00001-003.

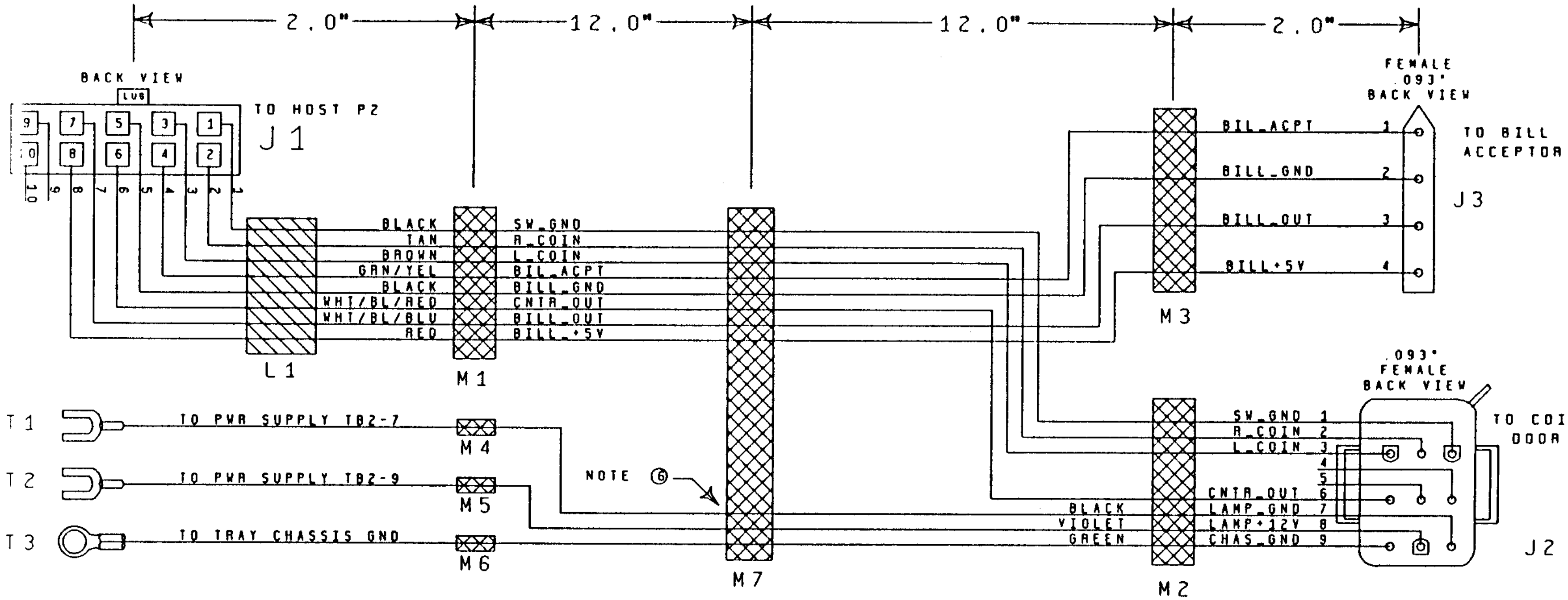
PARTS LIST

REF DES	MFG	PART NO	PIN NO
P1	MOLEX	03-09-2092	02-09-6123
P2	MOLEX	19-09-2026	02-09-2118
T2 - T9	AMP	2-520184-4	
T1	AMP	2-520571-2	
R1	CLAROSTAT	RV4NAYSD502A	
SW3	SWITCHCRAFT	46202LR	

MARKER LIST

REF DES		MFG	PART NO	TEXT SIZE	TEXT
M1		BRADY	HCPS.9-8336W	.125"	PANEL CONTROLS
M2		BRADY	HCPS.9-2508W	.125"	PWR SUPPLY
M3	M5	BRADY	HCPS.9-2508W	.125"	C
M4	M6	BRADY	HCPS.9-2508W	.125"	NO
M8	M10	BRADY	HCPS.9-2508W	.125"	12V
M7	M9	BRADY	HCPS.9-2508W	.125"	GND
M11		BRADY	HCPS1.9-8336W	.125"	(LINE 1) PANEL CONTROL HARNESS (LINE 2) DW-00014C-0003-02

DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER: [signature]	DATE: 12-12-90	TITLE: PANEL CONTROL HARNESS	
ENGINEER: JAY G. McKIBBIN	DATE	SIZE: C	DRAWING NUMBER: DW-00014C-0003
APPROVAL: [signature]	DATE: 12/14/90	REV -02	RELEASE CABLE.3
APPROVAL	DATE	DATE 12-13-1990_14:44	SHEET 1 OF 1



NOTES:

1) ALL 22 AWG WIRE SHALL MEET OR EXCEED UL1061.
2) PLACE MARKERS M4 - M6 ONE INCH FROM RING TERMINALS (T1 - T3).
3) TIE WRAP AT INTERVALS OF FOUR INCHES.
4) MARKER M7 HAS TWO LINES OF TEXT.
5) SECURE FERRITE BEAD (L1) TO CABLE WITH WIRE TIE.
6) BREAKOUT WIRES TO T1 - T3 AND TIE WRAP SEPERATELY FROM M7 TO POWER SUPPLY TERMINALS.
7) ASSEMBLED CABLE IS MPG P/N A18-00001-004.

WIRE LIST (ALL WIRE IS 22 AWG)

SIGNAL	FROM	TO	COLOR	BELDEN PART NO
SW_GND	J1-01	J2-1	BLACK	9921-10
R_COIN	J1-02	J2-2	TAN	9921-11
L_COIN	J1-03	J2-3	BROWN	9921-1
BIL_ACPT	J1-04	J3-1	GRN/YEL	9921-189
BILL_GND	J1-05	J3-1	BLACK	9921-10
CNTR_OUT	J1-06	J2-6	WHT/BL/RED	9921-23
BILL_OUT	J1-07	J3-3	WHT/BL/BLU	9921-26
BILL+5V	J1-08	J3-4	RED	9921-02
LAMP_GND	T1	J2-7	BLACK	9921-10
LAMP+12V	T2	J2-8	VIOLET	9921-7
CHAS_GND	T3	J2-9	GREEN	9921-5

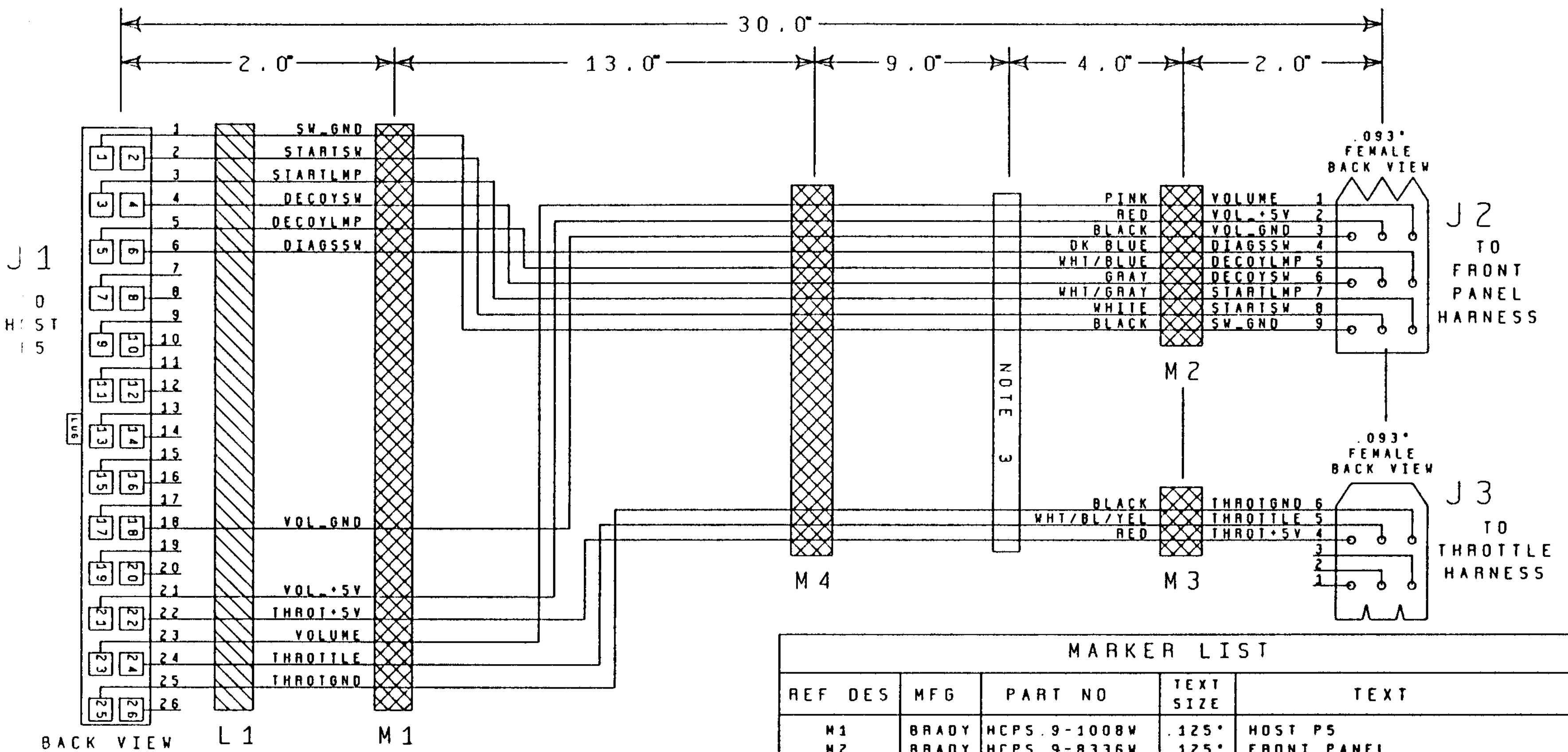
PARTS LIST

REF DES	MFG	PART NO	PIN NO
J1	MOLEX	14-57-1101	
J2	AMP	1-480706-0	350851-1
J3	MOLEX	19-09-1046	02-09-1117
T1 - T3	MOLEX	AA-234-08X	
L1	FAIR-RITE	2643540002	

MARKER LIST

REF DES	MFG	PART NO	TEXT SIZE	TEXT
M1	BRADY	HCPS.9-1008W	.125"	HOST P2
M2	BRADY	HCPS.9-8336W	.125"	COIN DOOR
M3	BRADY	HCPS.9-5008W	.125"	BILL ACCEPTOR
M4	BRADY	HCPS.9-2508W	.125"	TB2-7
M5	BRADY	HCPS.9-2508W	.125"	TB2-9
M6	BRADY	HCPS.9-2508W	.125"	CHASSIS GND
M7	BRADY	HCPS1.9-1008W	.125"	(LINE 1)COIN DOOR CABLE (LINE 2)DW-00014C-0004-02

DRAFTER	DATE	
DAVID J. BELLAMY		MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKED	DATE 12-02-90	TITLE
ENGINEER JAY G. McKIBBIN	DATE	COIN DOOR CABLE
APPROVAL	DATE 12/14/90	SIZE C — DRAWING NUMBER DW-00014C-0004
APPROVAL	DATE	REV - 02 RELEASE CABLE.4
		DATE 12-13-1990.14:58 SHEET 4 OF 1



MARKER LIST

REF DES	MFG	PART NO	TEXT SIZE	TEXT
M1	BRADY	HCPS.9-1008W	.125"	HOST P5
M2	BRADY	HCPS.9-8336W	.125"	FRONT PANEL
M3	BRADY	HCPS.9-5008W	.125"	THROTTLE
M4	BRADY	HCPS1.9-1008W	.125"	(LINE 1)THROTTLE/PANEL CABLE (LINE 2)DW-00014C-0005-02

PARTS LIST

REF DES	MFG	PART NO	PIN NO
J1	MOLEX	14-57-3260	02-09-5142
J2	MOLEX	03-09-1094	02-09-5142
J3	MOLEX	03-09-1064	
L1	FAIR-RITE	2643665702	

WIRE LIST (ALL WIRE IS 22 AWG)

SIGNAL	FROM	TO	COLOR	BELDEN PART NO
SW_GND	J1-01	J2-09	BLACK	9921-10
STARTSW	J1-02	J2-08	WHITE	9921-9
STARTLMP	J1-03	J2-07	WHT/GRAY	9921-21
DECOYSW	J1-04	J2-06	GRAY	9921-8
DECOYLMP	J1-05	J2-05	WHT/BLUE	9921-18
DIAGSSW	J1-06	J2-04	DK BLUE	9921-13
VOL_GND	J1-18	J2-03	BLACK	9921-10
VOL_+5V	J1-21	J2-02	RED	9921-2
THROT+5V	J1-22	J3-04	RED	9921-2
VOLUME	J1-23	J2-01	PINK	9921-12
THROTTLE	J1-24	J3-05	WHT/BL/YEL	9921-25
THROTGND	J1-25	J3-06	BLACK	9921-10

NOTES:

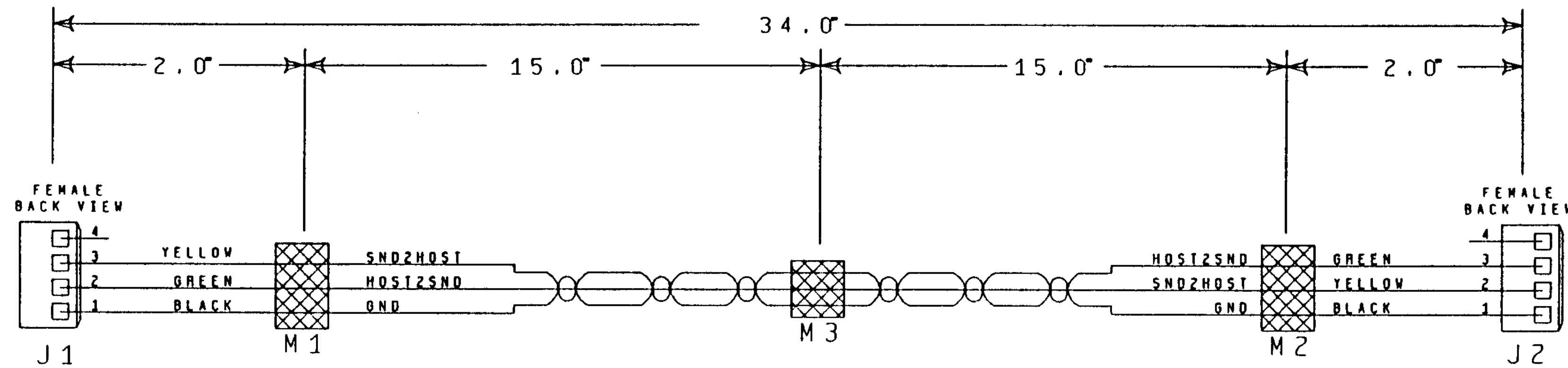
1) ALL 22 AWG WIRE SHALL MEET OR EXCEED UL1061.
2) SECURE FERRITE BEAD L1 TO CABLE WITH WIRE TIE.
3) BREAKOUT WIRES TO J3 AS POSITION SHOWN.
4) TIE WRAP AT INTERVALS OF TWO INCHES.
5) MARKER M4 HAS TWO LINES OF TEXT.
6) ASSEMBLED HARNESS IS MPG P/N A18-00001-005.

DRAFTER	DAVID J. BELLAMY
CHECKER / DATE	12-12-90
ENGINEER	JAY G. McKIBBIN
APPROVAL / DATE	12/14/90
APPROVAL / DATE	

MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

TITLE
THROTTLE/PANEL CABLE

SIZE	DRAWING NUMBER	
C	DW-00014C-0005	
	REV -02	RELEASE CABLE.5
	DATE 12-13-1990_15:40	SHEET 1 OF 1



WIRE LIST (ALL WIRE IS 22 AWG)				
SIGNAL	FROM	TO	COLOR	BELDEN PART NO
GND	J1-01	J2-01	BLACK	9921-10
HOST2SND	J1-02	J2-03	GREEN	9921-5
SND2HOST	J1-03	J2-02	YELLOW	9921-4

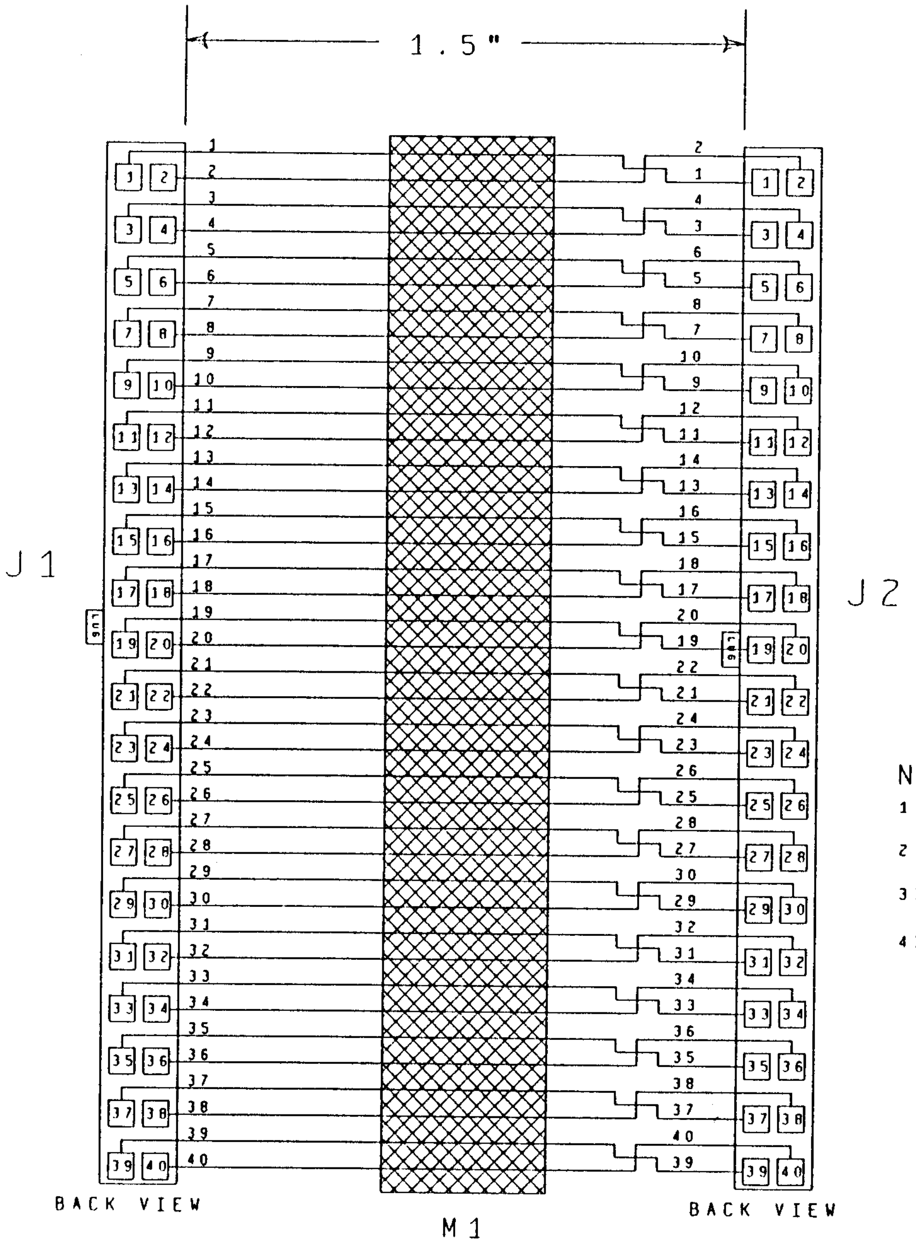
PARTS LIST			
REF DES	MFG	PART NO	PIN NO
J1	MOLEX	22-01-2041	08-50-0114
J2	MOLEX	22-01-2041	08-50-0114

MARKER LIST				
REF DES	MFG	PART NO	TEXT SIZE	TEXT
M1	BRADY	HCPS.9-5008W	.125"	HOST J1
M2	BRADY	HCPS.9-5008W	.125"	SND BRD J1
M3	BRADY	HCPS1.9-5008W	.125"	(LINE 1) RS-232 CABLE #1 (LINE 2) DW-00014C-0006-02

NOTES:

1) ALL 22 AWG WIRE SHALL MEET OR EXCEED UL1061.
2) TIE WRAP AT INTERVALS OF TWO INCHES.
3) MARKER M3 HAS TWO LINES OF TEXT.
4) WIRES ARE TWISTED BETWEEN MARKERS M1 AND M2.
5) ASSEMBLED CABLE IS MPG P/N A18-00001-006.

DRAFTER	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
DAVID J. BELLAMY		
CHECKER	DATE 12-10-90	TITLE RS-232 CABLE #1
ENGINEER	DATE	
JAY G. McKIBBIN		
APPROVAL	DATE 12/13/90	SIZE C · DRAWING NUMBER DW-00014C-0006
APPROVAL	DATE	REV -02 · RELEASE CABLE.6
		DATE 12-11-1990_10:36 · SHEET 1 OF 1



MARKER LIST				
REF DES	MFG	PART NO	TEXT SIZE	TEXT
M1	BRADY	DAT-9-292	.125"	(LINE 1) HOST TO VGB (LINE 2) DW-00014C-0007-02

PARTS LIST			
REF DES	MFG	PART NO	PIN NO
J1	DUPONT	71602-040	
J2	DUPONT	71602-040	
CABLE	3-M	3365/40	

NOTES:

1) ALL 28 AWG RIBBON CABLE SHALL MEET OR EXCEED UL2651.

2) MARKER M1 HAS TWO LINES OF TEXT.

3) DISTANCE SPECIFIED BETWEEN J1 AND J2 IS MEASURED BETWEEN THE INSIDE EDGES OF J1 AND J2 AFTER ASSEMBLY.

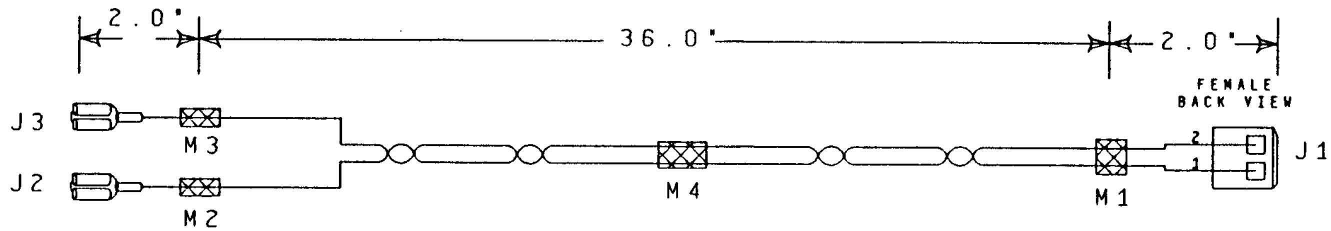
4) ASSEMBLED CABLE IS MPG P/N A18-00001-007.

DRAFTER: DAVID J. BELLAMY	DATE:
CHECKER:	DATE: 12-10-90
ENGINEER: JAY G McKIBBIN	DATE:
APPROVAL:	DATE: 12/13/90
APPROVAL:	DATE:

MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

TITLE: HOST TO VGB RIBBON CABLE

SIZE: C | DRAWING NUMBER: DW-00014C-0007
REV: -02 | RELEASE: CABLE.7
DATE: 11-27-1990_17:29 | SHEET 7 OF 1



WIRE LIST (ALL WIRE IS 22 AWG)				
SIGNAL	FROM	TO	COLOR	BELDEN PART NO
L AUDIO	J1-01	J2	WHT/RED	9921-15
GND	J1-02	J3	BLACK	9921-10

PARTS LIST			
REF DES	MFG	PART NO	PIN NO
J1	MOLEX	22-01-2021	08-50-0114
J2, J3	AMP	2-520181-4	

MARKER LIST				
REF DES	MFG	PART NO	TEXT SIZE	TEXT
M1	BRADY	HCPS.9-375BW	.125"	SOUND BD J5
M2	BRADY	HCPS.9-250BW	.125"	L SPKR +
M3	BRADY	HCPS.9-250BW	.125"	L SPKR -
M4	BRADY	HCPS1.9-375BW	.125"	(LINE 1) LEFT SPEAKER CABLE (LINE 2) DW-00014C-0008-02

NOTES:

1) ALL 22 AWG WIRE SHALL MEET OR EXCEED UL1061.
2) TIE WRAP AT INTERVALS OF TWO INCHES.
3) MARKER M4 HAS TWO LINES OF TEXT.
4) TWIST WIRE PAIR AND TIE WRAP AT 4" INTERVALS.
5) ASSEMBLED CABLE IS MPG P/N A18-00001-0008

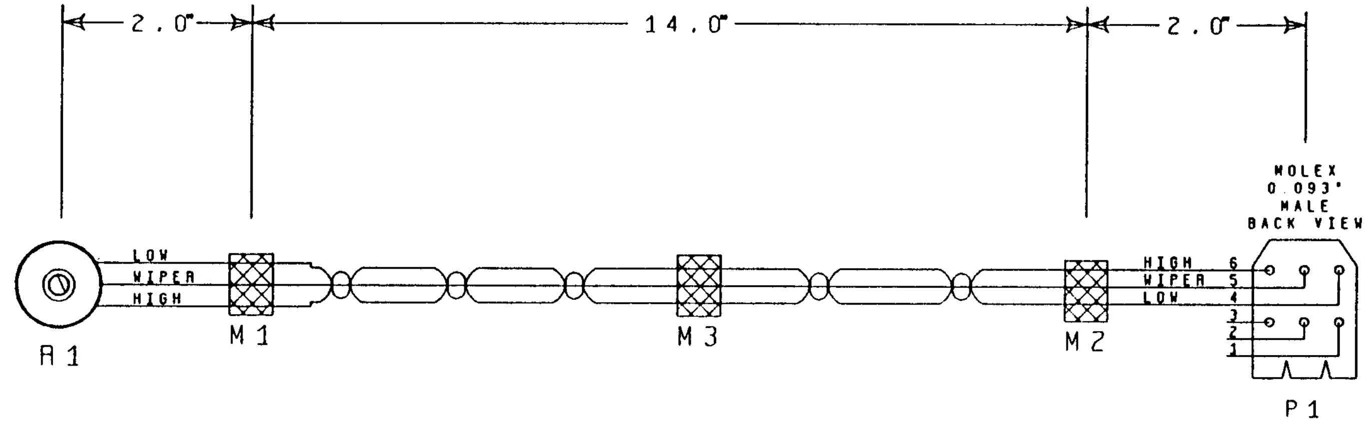
DRAFTER: DAVID J. BELLAMY	DATE
CHECKER	DATE: 12-10-90
ENGINEER: JAY G. McKIBBIN	DATE
APPROVAL	DATE: 12/13/90
APPROVAL	DATE

MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

TITLE: LEFT SPEAKER CABLE

SIZE: C | DRAWING NUMBER: DW-00014C-0008 | REV -02 | RELEASE CABLE.8

DATE 12-11-1990_10:07 | SHEET 1 OF 1



WIRE LIST (ALL WIRE IS 22 AWG)				
SIGNAL	FROM	TO	COLOR	BELDEN PART NO
LOW	R1-01	P1-04	BLACK	9921-10
WIPER	R1-02	P1-05	WHITE	9921-9
HIGH	R1-03	P1-06	RED	9921-2

PARTS LIST			
REFDES	MFG	PART NO	PIN NO
P1	MOLEX	03-09-2064	02-09-2116
R1	CLAROSTAT	RV4NAYSD502A	

MARKER LIST				
REFDES	MFG	PART NO	TEXT SIZE	TEXT
M1	BRADY	HCPS.9-5008W	.125"	THROTTLE
M2	BRADY	HCPS.9-5008W	.125"	THROTTLE 2 HOST
M3	BRADY	HCPS1.9-3758W	.125"	(LINE 1) THROTTLE HARNESS (LINE 2) DW-00014C-0009-02

NOTES:

1) ALL 22 AWG WIRE SHALL MEET OR EXCEED UL1061.
2) TIE WRAP AT INTERVALS OF TWO INCHES.
3) MARKER M3 HAS TWO LINES OF TEXT.
4) WIRES ARE TWISTED BETWEEN MARKERS M1 AND M2.
5) ASSEMBLED HARNESS IS MPG P/N A18-00001-009.

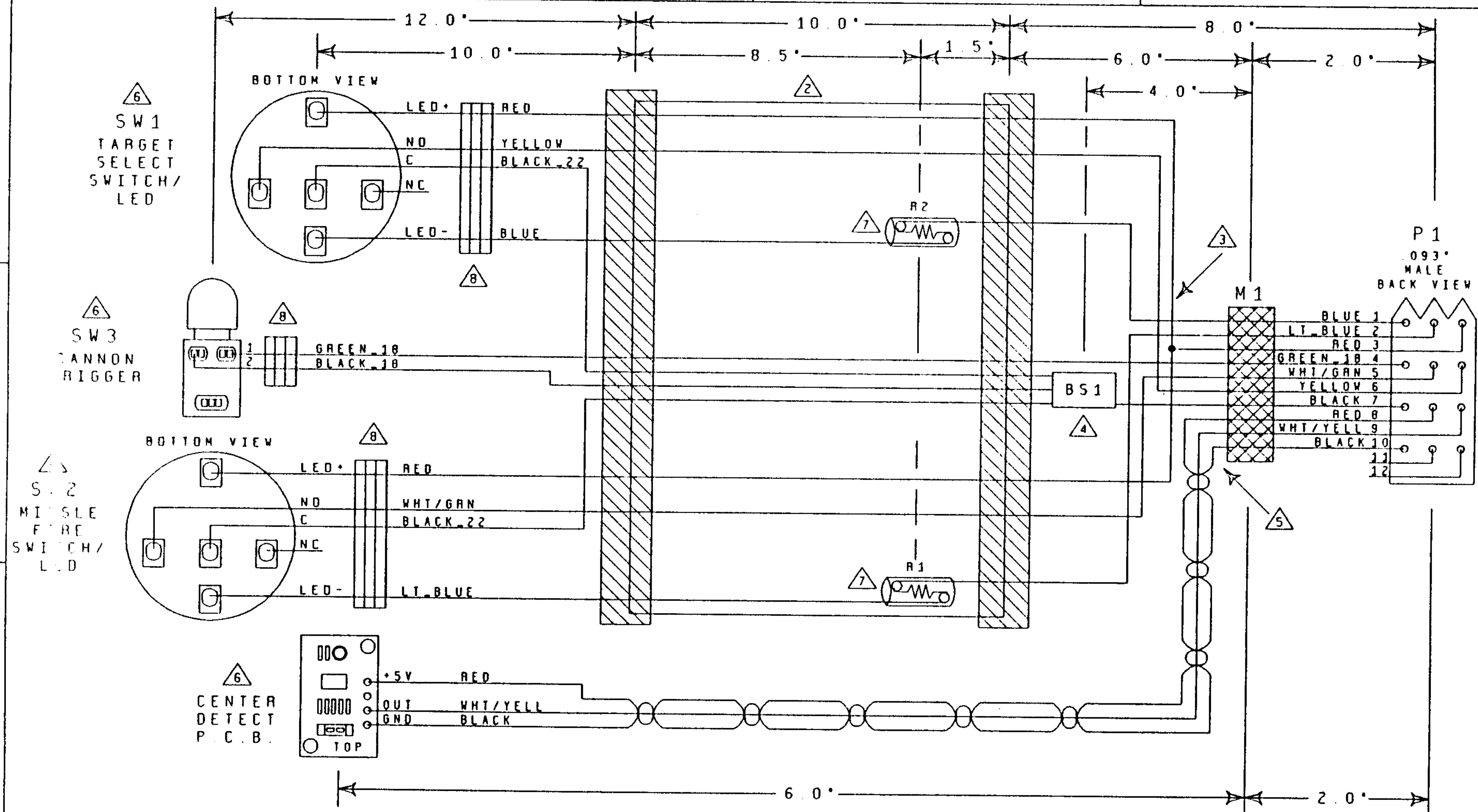
DRAFTER: DAVID J BELLAMY	DATE:
CHECKED:	DATE: 12-12-90
ENGINEER: JAY G. McKIBBIN	DATE:
APPROVAL:	DATE: 12/13/90
APPROVAL:	DATE:

MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

TITLE: THROTTLE HARNESS

SIZE: C | DRAWING NUMBER: DW-00014C-0009 | REV -02 | RELEASE CABLE 13

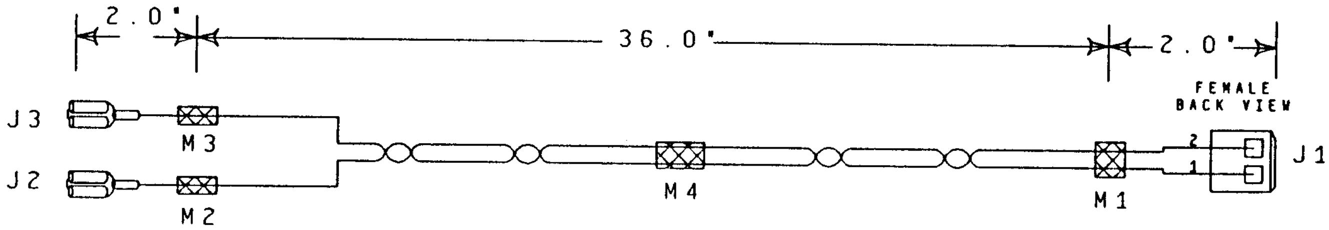
DATE 12-12-1990.15:21 | SHEET 1 OF 1



NOTES:

1. ALL 18 AND 22 AWG WIRE SHALL MEET OR EXCEED UL1061.
2. COVER THIS 10 INCH SECTION WITH 3/8 INCH I.D. BENTLEY/HARRIS EXPANDO PT TUBING. SECURE BOTH ENDS OF MESH WITH 1 INCH LONG PIECES OF HEAT SHRINK TUBING.
3. TWO WIRES INSERTED INTO P1 PIN 3 AND CRIMPED.
4. SPLICE TO ACCOMODATE .3541" C.M.A. SOLDER AND HEAT SHRINK INSULATE. NOTE BLACK 18 AWG TEFLON WIRE.
5. BREAKOUT WIRES TO CENTER DETECT AT M1. TWIST WIRES. TIE WRAP AT TWO INCH INTERVALS.
6. SW1, SW2, SW3 AND CENTER DETECT PCB SHOWN FOR REFERENCE ONLY. ALL LEADS ARE STRIPPED AND SOLDER TINNED 1/4 IN LONG.
7. R1 & R2 SOLDERED/CRIMPED IN-LINE AS SHOWN AND HEAT SHRINK INSULATED.
8. SECURE WIRE ENDS HERE WITH ELECTRICAL TAPE FOR SHIPPING. (THREE SEPERATE TAPED BUNDLES) TAPE:
9. MARKER M1 HAS TWO LINES OF TEXT.
10. ASSEMBLED HARNESS IS MPG P/N A18-00001-010.

DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKED: [signature]	DATE: 12-10-90	TITLE: JOYSTICK HARNESS
ENGINEER: JAY G. McKIBBIN	DATE	
APPROVAL: [signature]	DATE: 12/17/90	SIZE: C — DRAWING NUMBER: DW-00014C-0010
APPROVAL	DATE	REV -02 — RELEASE JOYS.2
		DATE 12-10-1990_17:55 — SHEET 2 OF 2



WIRE LIST (ALL WIRE IS 22 AWG)				
SIGNAL	FROM	TO	COLOR	BELDEN PART NO
R AUDIO	J1-01	J2	WHT/BLK	9921-14
GND	J1-02	J3	BLACK	9921-10

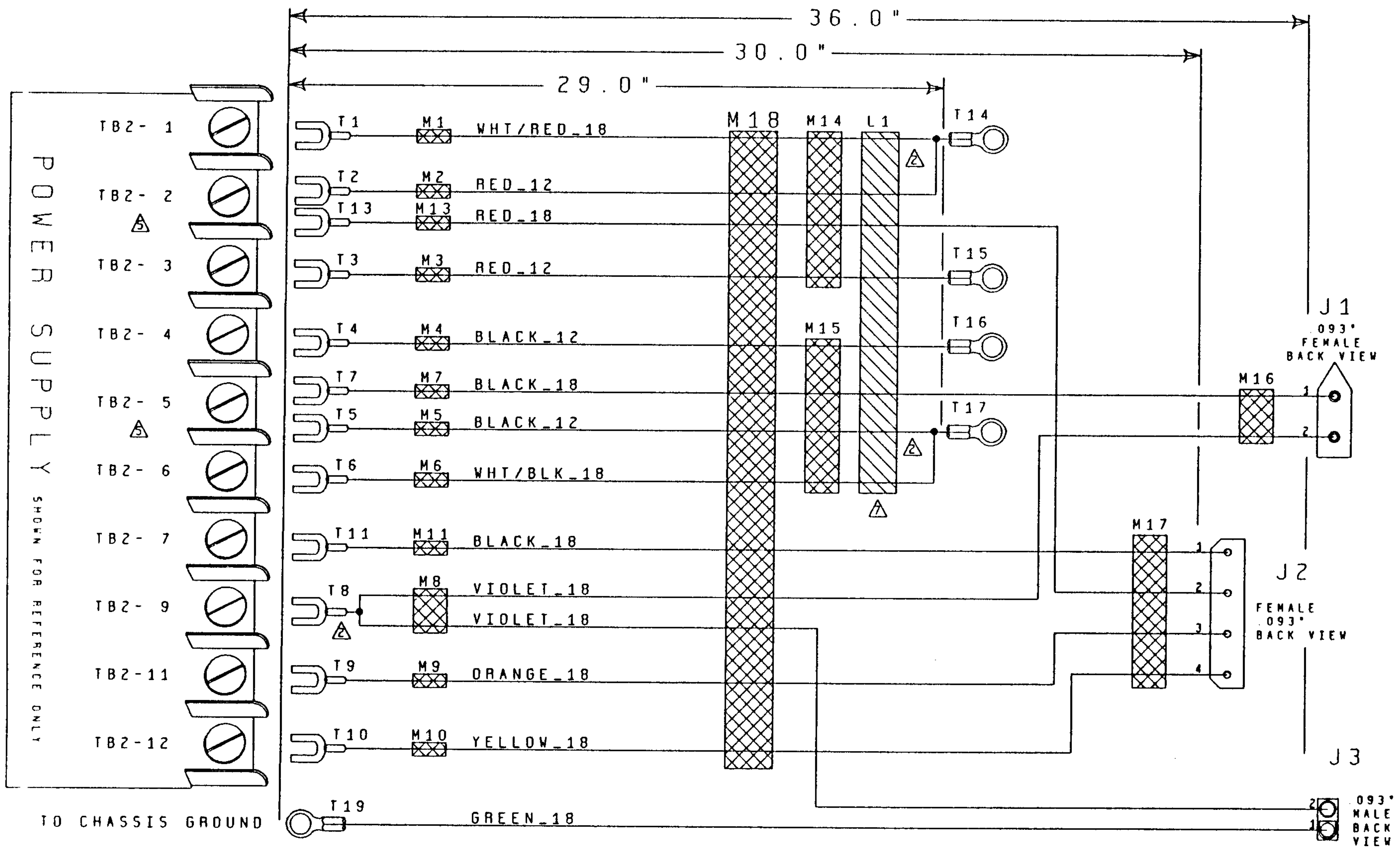
PARTS LIST			
REF DES	MFG	PART NO	PIN NO
J1	MOLEX	22-01-2021	08-50-0114
J2, J3	AMP	2-520181-4	

MARKER LIST				
REF DES	MFG	PART NO	TEXT SIZE	TEXT
M1	BRADY	HCPS.9-3758W	.125"	SOUND BD J5
M2	BRADY	HCPS.9-2508W	.125"	R SPKR +
M3	BRADY	HCPS.9-2508W	.125"	R SPKR -
M4	BRADY	HCPS1.9-3758W	.125"	(LINE 1) RIGHT SPEAKER CABLE (LINE 2) DW-00014C-0011-02

NOTES:

1) ALL 22 AWG WIRE SHALL MEET OR EXCEED UL1061.
2) TIE WRAP AT INTERVALS OF TWO INCHES.
3) MARKER M4 HAS TWO LINES OF TEXT.
4) TWIST WIRE PAIR AND TIE WRAP AT 4" INTERVALS.
5) ASSEMBLED CABLE IS MPG P/N A18-00001-0011

DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER: [signature]	DATE: 12-10-90	TITLE: RIGHT SPEAKER CABLE
ENGINEER: JAY G. McKIBBIN	DATE	
APPROVAL: [signature]	DATE: 12/14/90	SIZE: C; DRAWING NUMBER: DW-00014C-0011
APPROVAL	DATE	REV -02; RELEASE CABLE.9
		DATE 12-11-1990_10:12; SHEET 1 OF 1



NOTES:

1. ALL WIRE SHALL MEET OR EXCEED UL1015.
2. TWO WIRES ARE INSERTED INTO THIS CONNECTION.
3. MARKERS ARE PLACED 1" FROM TERMINALS/CONNECTORS EXCEPT M18 WHICH IS APPROXIMATELY CENTERED.
4. T14 - T17 CONNECT TO THE DC POWER DISTRIBUTION PCB.
5. T2 & T13 CONNECT TO TB2-2. T3 & T7 CONNECT TO TB2-5.
6. TIE WRAP EVERY FOUR INCHES.
7. SECURE FERRITE BEAD L1 TO CABLE WITH WIRE TIE.
8. ASSEMBLED HARNESS IS MPG P/N A18-00002-001.

DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER	DATE: 12-12-90	TITLE: DC POWER HARNESS
ENGINEER: JAY G. McKIBBIN	DATE	
APPROVAL	DATE: 12/19/90	SIZE: C · DRAWING NUMBER: DW-00014C-0012
APPROVAL	DATE	REV - 02 · RELEASE DCWH1.1
		DATE 12-13-1990_13:47 · SHEET 1 OF 2

WIRE LIST

SIGNAL	FROM	TO	COLOR	AWG	BELDEN PART NO
+SENSE	T1	T14	WHT/RED	18	8918-15
BKPLN_V1	T2	T14	RED	12	9912-2
BKPLN_V1	T3	T15	RED	12	9912-2
BKPLNRTN	T4	T16	BLACK	12	9912-10
BKPLNRTN	T5	T17	BLACK	12	9912-10
-SENSE	T6	T17	WHT/BLK	18	8918-14
FAN_RTN	T7	J1-1	BLACK	18	8918-10
FAN_V2	T8	J1-2	VIOLET	18	8918-7
PANEL_V2	T8	J3-2	VIOLET	18	8918-7
SND_V3	T9	J2-3	ORANGE	18	8918-3
SND_V4	T10	J2-4	YELLOW	18	8918-4
SND_RTN	T11	J2-1	BLACK	18	8918-10
SND_V1	T13	J2-2	RED	18	8918-2
CHAS_GND	T19	J3-1	GREEN	18	8918-5

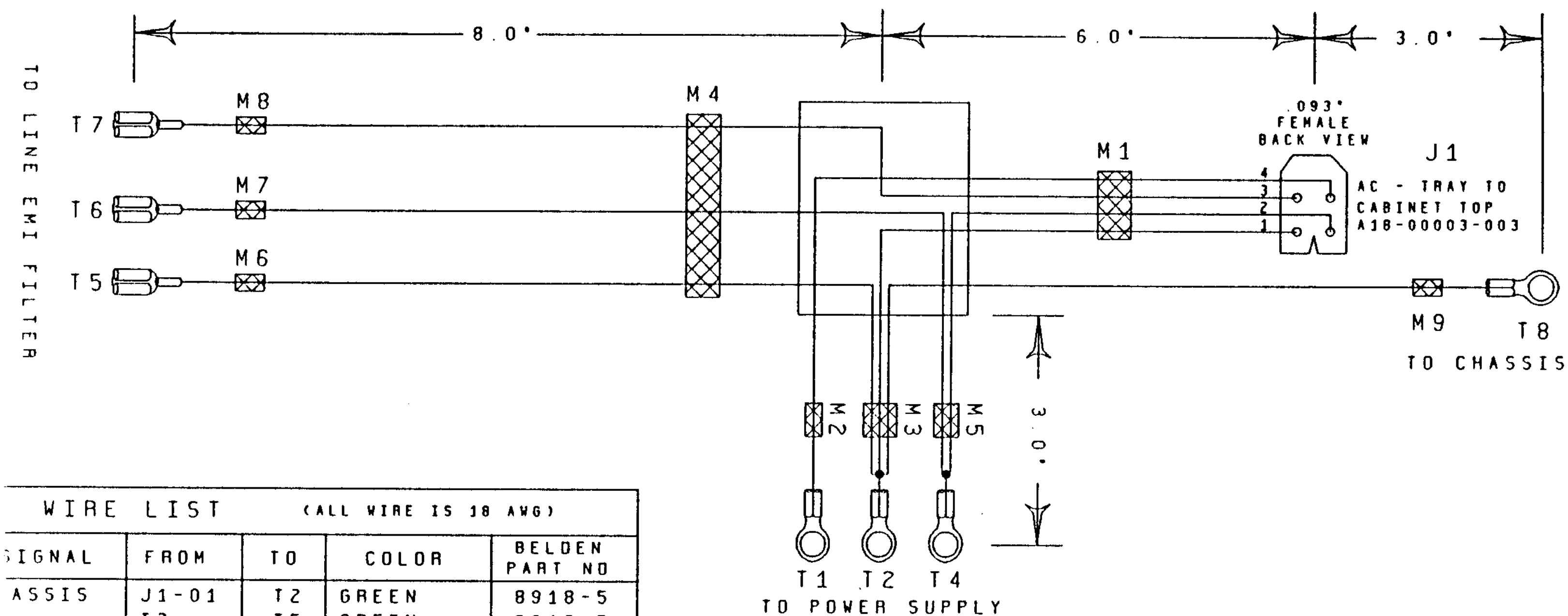
PARTS LIST

REFDES	MFG	PART NO	PIN NO
T1, T6, T7, T9, T10, T11, T13	MOLEX	AA-234-08X	
T2 - T5, T8	MOLEX	C-236-08X	
T14 - T17	MOLEX	D-656-10X	
T19	MOLEX	C-236-08X	
J1	MOLEX	03-06-1023	02-06-1101
J2	MOLEX	15-24-4048	02-08-1201
J3	MOLEX	19-09-1026	02-09-1117
L1	FAIR-RITE	2643164151	

MARKER LIST

REF DES	MFG	PART NO	TEXT SIZE	TEXT LINE 1	TEXT LINE 2
M1	BRADY	HCPS.9-2508W	.125"	+SENSE	TB2-1
M2	BRADY	HCPS.9-3336W	.125"	V1	TB2-2
M3	BRADY	HCPS.9-3336W	.125"	V1	TB2-3
M4	BRADY	HCPS.9-3336W	.125"	RETURN	TB2-4
M5	BRADY	HCPS.9-2508W	.125"	RETURN	TB2-5
M6	BRADY	HCPS.9-3336W	.125"	-SENSE	TB2-6
M7	BRADY	HCPS.9-3336W	.125"	RETURN	TB2-5
M8	BRADY	HCPS.9-3336W	.125"	V2	TB2-9
M9	BRADY	HCPS.9-2508W	.125"	V3	TB2-11
M10	BRADY	HCPS.9-2508W	.125"	V4	TB2-12
M11	BRADY	HCPS.9-2508W	.125"	RETURN	TB2-7
M13	BRADY	HCPS.9-2508W	.125"	V1	TB2-2
M14	BRADY	HCPS.9-5008W	.125"	VDD	
M15	BRADY	HCPS.9-5008W	.125"	GND	
M16	BRADY	HCPS.9-3758W	.125"	FAN	
M17	BRADY	HCPS.9-5008W	.125"	SOUND BOARD	
M18	BRADY	HCPS1.9-1008W	.125"	DC POWER HARNESS	DW-00014C-0012-02

DRAFTER: DAVID J. BELLAMY	DATE:	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER: (signature)	DATE: 12-12-90	TITLE: DC POWER HARNESS
ENGINEER: JAY G. McKIBBIN	DATE:	
APPROVAL: (signature)	DATE: 12/14/90	SIZE: C — DRAWING NUMBER: DW-00014C-0012
APPROVAL:	DATE:	REV -02 — RELEASE DLWH1.2
		DATE 12-13-1990_13 53 — SHEET 2 OF 2



WIRE LIST (ALL WIRE IS 18 AWG)				
SIGNAL	FROM	TO	COLOR	BELDEN PART NO
CHASSIS	J1-01	T2	GREEN	8918-5
	T2	T5	GREEN	8918-5
	T2	T8	GREEN	8918-5
COMMON	J1-02	T4	WHITE	8918-9
	T4	T6	WHITE	8918-9
UNSWLINE	J1-03	T7	WHT/BLK	8918-14
SW_LINE	J1-04	T1	BLACK	8918-10

PARTS LIST			
REFDES	MFG	PART NO	PIN NO
J1	MOLEX	03-09-1049	02-09-1117
T1	MOLEX	AA-232-08X	RING TERM
T2	MOLEX	C-236-08X	RING TERM
T4,T8	MOLEX	BB-223-08X	RING TERM
T5 - T7	MOLEX	AA-2201C	PUSH-ON

MARKER LIST				
REFDES	MFG	PART NO	TEXT SIZE	TEXT
M1	BRADY	HCPS.9-6258W	.125"	INPUT AC
M2	BRADY	HCPS.9-2508W	.125"	TB1-1
M3	BRADY	HCPS.9-5008W	.125"	TB1-3
M4	BRADY	HCPS1.9-6258W	.125"	(LINE 1) INPUT AC HARNESS (LINE 2) DW-00014C-0014-02
M5	BRADY	HCPS.9-3758W	.125"	TB1-2
M6	BRADY	HCPS.9-2508W	.125"	GND
M7	BRADY	HCPS.9-2508W	.125"	COMM
M8	BRADY	HCPS.9-2508W	.125"	LINE
M9	BRADY	HCPS.9-2508W	.125"	GND

NOTES:

1) ALL 18 AWG WIRE SHALL MEET OR EXCEED UL1015.
2) TIE WRAP AT INTERVALS OF TWO INCHES.
3) MARKER M4 HAS TWO LINES OF TEXT.
4) TERMINAL T2 HAS 3 WIRES IN CRIMP.
5) TERMINAL T4 HAS 2 WIRES IN CRIMP.
6) BREAKOUT WIRES TO T1, T2 & T4. SECURE WITH TIE WRAP.
7) PLACE MARKERS M2 - M3 & M5 - M9 1" FROM TERMINALS.
8) ASSEMBLED HARNESS IS MPG P/N A18-00003-002.

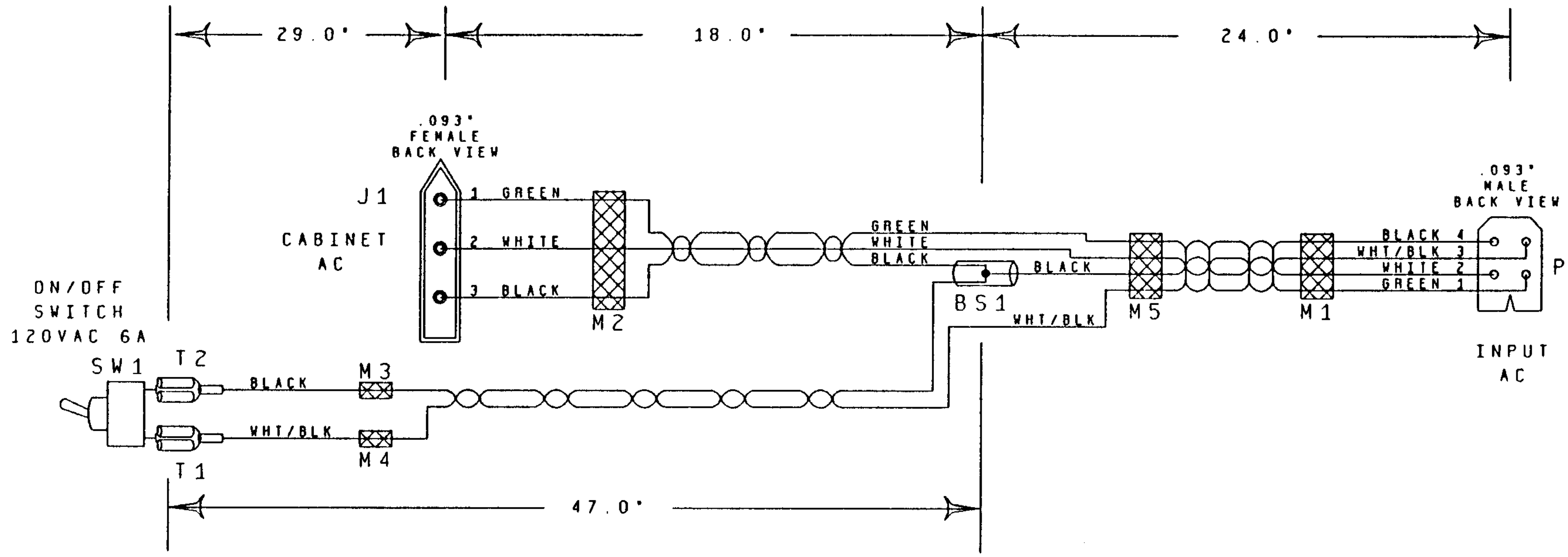
DRAFTER: DAVID J. BELLAMY	DATE:
CHECKER:	DATE: 12-12-90
ENGINEER: JAY G. McKIBBIN	DATE:
APPROVAL:	DATE: 12/13/90
APPROVAL:	DATE:

MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

TITLE: INPUT AC HARNESS

SIZE: C — DRAWING NUMBER: DW-00014A-0014 — REV - 02 — RELEASE ACWH1.1

DATE 12-12-1990_13:43 — SHEET 1 OF 1



WIRE LIST (ALL WIRE IS 18 AWG)

SIGNAL	FROM	TO	COLOR	BELDEN PART NO
CHASSIS	P1-01	J1-01	GREEN	8918-5
COMMON	P1-02	J1-02	WHITE	8918-9
UNSWLINE	P1-03	T1	WHT/BLK	8918-14
SW LINE	P1-04	T2	BLACK	8918-10
	J1-03	T2	BLACK	8918-10

PARTS LIST

REFDES	MFG	PART NO	PIN NO
J1	MOLEX	03-09-1032	02-09-1117
P1	MOLEX	03-09-2049	02-09-2116
T1	MOLEX	AA-2201C	PUSH-ON
T2	MOLEX	BB-2206C	PUSH-ON
BS1	T. B. D.	T. B. D.	

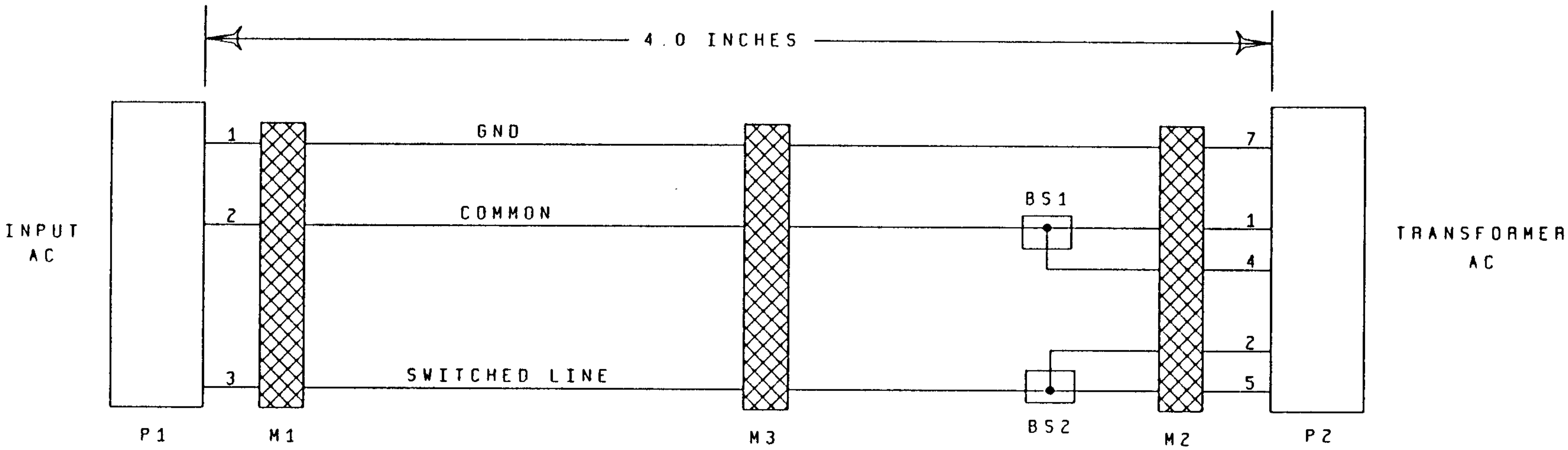
MARKER LIST

REFDES	MFG	PART NO	TEXT SIZE	TEXT
M1	BRADY	HCPS.9-6258W	.125"	INPUT AC
M2	BRADY	HCPS.9-5008W	.125"	CABINET AC
M3	BRADY	HCPS.9-3758W	.125"	SW LINE
M5	BRADY	HCPS1.9-6258W	.125"	(LINE 1) AC-TRAY TO TOP HARN (LINE 2) DW-00014C-0015-02
M4	BRADY	HCPS.9-2508W	.125"	UNSW LINE

NOTES:

1) ALL 18 AWG WIRE SHALL MEET OR EXCEED UL1015.
2) TIE WRAP AT INTERVALS OF TWO INCHES.
3) MARKER M5 HAS TWO LINES OF TEXT.
4) BUTT SPLICE BS1 HAS 3 WIRES IN CRIMP.
5) TWIST WIRES FROM P1 TO J1 AND FROM BS1 TO TERMINALS.
6) BREAKOUT WIRES AT BS1. SECURE WITH TIE WRAP.
7) SW1 IS SHOWN FOR REFERENCE ONLY.
8) ASSEMBLED HARNESS IS MPG P/N A18-00003-003.

DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER	DATE: 12-13-90	TITLE: AC - TRAY TO CABINET TOP
ENGINEER: JAY G. McKIBBIN	DATE	
APPROVAL	DATE: 12/14/90	SIZE: C — DRAWING NUMBER: DW-00014A-0015
APPROVAL	DATE	REV -02 — RELEASE ACWH2.1
		DATE 12-13-1990_13:26 — SHEET 1 OF 1



PARTS LIST			
REFDES	DESCRIPTION	PART NO	PIN NO
P1	CONNECTOR, PLUG	MOLEX 03-09-2032	02-09-2116
P2	CONNECTOR, RECEPTICAL	MOLEX 03-09-1094	02-09-1117
BS1 BS2	16 AWG BUTT SPLICE	MOLEX C-246X	

WIRE LIST				
SIGNAL	FROM	TO	COLOR	BELDEN PART NO
GROUND	P1-1	P2-7	GREEN	9918-5
COMMON	P1-2	BS1	WHITE/ORANGE	9918-20
COMMON	BS1	P2-1	WHITE/ORANGE	
COMMON	BS1	P2-4	WHITE/ORANGE	
SWITCHED LINE	P1-3	BS2	VIOLET	9918-7
SWITCHED LINE	BS2	P2-2	VIOLET	
SWITCHED LINE	BS2	P2-5	VIOLET	

MARKER LIST					
REFDES	TYPE SIZE	MFG	PART NO	TEXT	
				LINE 1	LINE 2
M1	.125"	BRADY	HCPS 9-8336W	100VAC	INPUT AC
M2	.125"	BRADY	HCPS 9-8336W	100VAC	XFORMER AC
M3	.125"	BRADY	HCPS 9-8336W	DW-00014A-0016-02	100VAC SELECT

NOTES: 1). ALL WIRE MUST MEET OR EXCEED UL1015.
2). LABEL MARKERS: [crosshatch]

COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

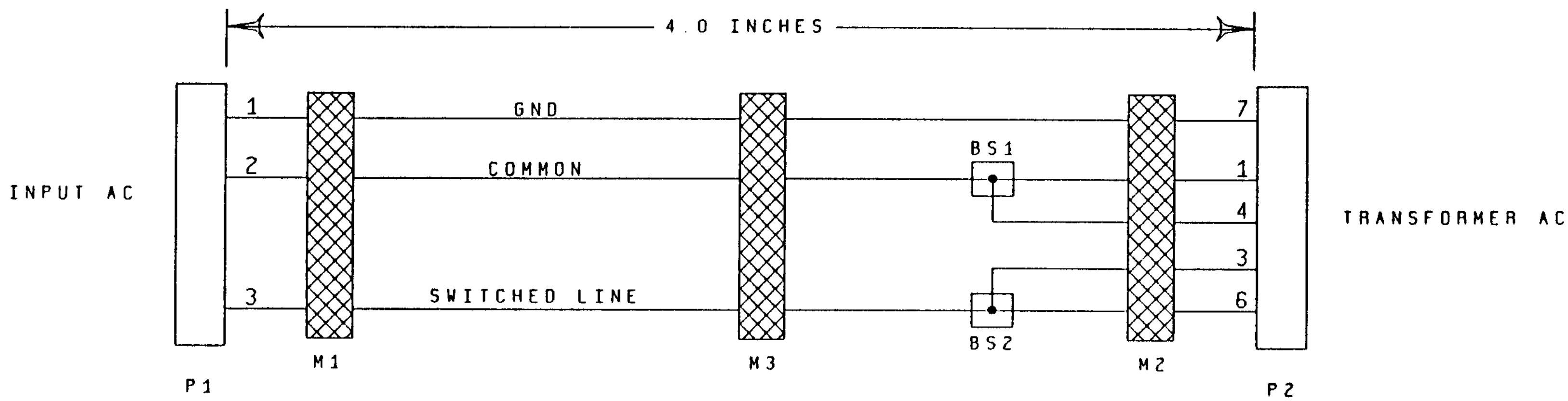
DRAFTER: DAVID J. BELLAMY	DATE
CHECKER: [signature]	DATE: 12-10-90
ENGINEER: JAY G. McKIBBIN	DATE
APPROVAL: [signature]	DATE: 12/13/90
APPROVAL	DATE

MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

TITLE: 100V AC VOLTAGE SELECTION HARNESS

SIZE: C | DRAWING NUMBER: DW-00014A-0016 | REV - 02 | RELEASE ACWH5.1

DATE 12-11-1990_18:31 | SHEET 1 OF 1



PARTS LIST			
REFDES	DESCRIPTION	PART NO	PIN NO
P1	CONNECTOR,PLUG	MOLEX 03-09-2032	02-09-2116
P2	CONNECTOR,RECEPTICAL	MOLEX 03-09-1094	02-09-1117
BS1 BS2	16 AWG BUTT SPLICE	MOLEX C-246X	

WIRE LIST				
SIGNAL	FROM	TO	COLOR	BELDEN PART NO
GROUND	P1-1	P2-7	GREEN	8918-5
COMMON	P1-2	BS1	WHITE	8918-9
COMMON	BS1	P2-1	WHITE	
COMMON	BS1	P2-4	WHITE	
SWITCHED LINE	P1-3	BS2	BLACK	8918-10
SWITCHED LINE	BS2	P2-3	BLACK	
SWITCHED LINE	BS2	P2-6	BLACK	

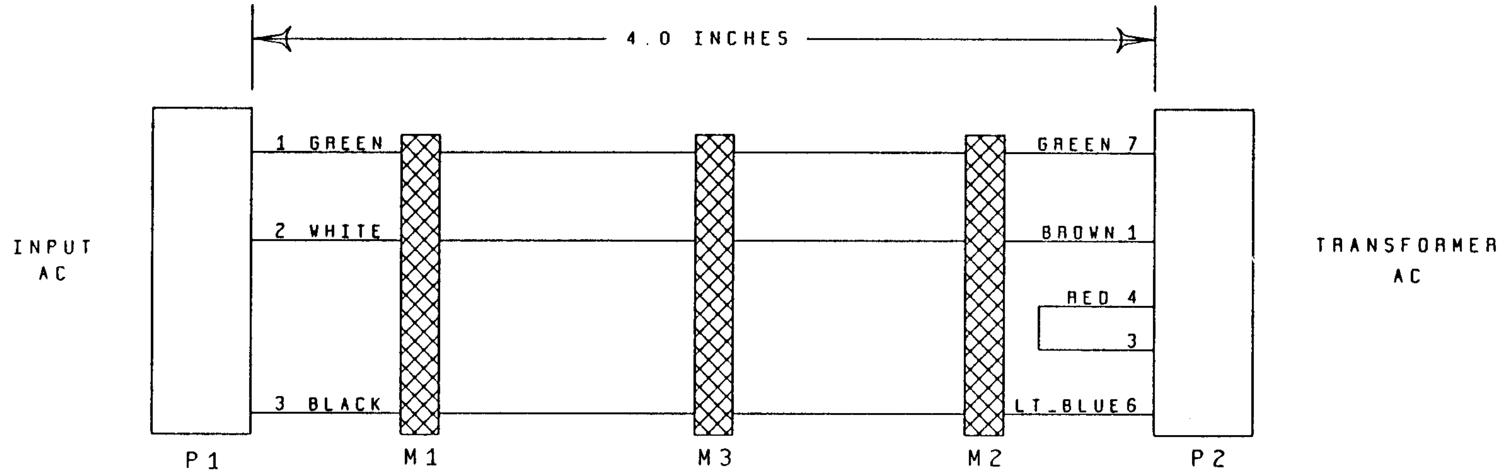
MARKER LIST					
REFDES	TYPE SIZE	MFG	PART NO	TEXT	
				LINE 1	LINE 2
M1	.125"	BRADY	HCPS 9-8336W	120VAC	INPUT AC
M2	.125"	BRADY	HCPS 9-8336W	120VAC	XFORMER AC
M3	.125"	BRADY	HCPS 9-8336W	DW-00014A-0016-02	120VAC SELECT

COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

NOTES: 1) ALL WIRE MUST MEET OR EXCEED UL1015.

DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER	DATE: 12-12-90	TITLE 120VAC VOLTAGE SELECTION HARNESS
ENGINEER: JAY G. McKIBBIN	DATE	
APPROVAL	DATE: 12/13/90	SIZE: C · DRAWING NUMBER: DW-00014A-0017 · REV -02 · RELEASE ACWH3.1
APPROVAL	DATE	DATE 12-12-1990_13:35 · SHEET 1 OF 1



PARTS LIST

REFDES	DESCRIPTION	PART NO	PIN NO
P1	CONNECTOR, PLUG	MOLEX 03-09-2032	02-09-2116
P2	CONNECTOR, RECEPTICAL	MOLEX 03-09-1094	02-09-1117

WIRE LIST

SIGNAL	FROM	TO	COLOR	BELDEN PART NO
GROUND	P1-1	P2-7	GREEN	8918-5
COMMON	P1-2	P2-1	BROWN	8918-1
SWITCHED LINE	P1-3	P2-6	LT_BLUE	8918-6
SWITCHED LINE	P2-3	P2-4	RED	8918-2

MARKER LIST

REFDES	TYPE SIZE	MFG	PART NO	TEXT LINE 1	TEXT LINE 2
M1	.125"	BRADY	HCPS 9-8336W	240VAC	INPUT AC
M2	.125"	BRADY	HCPS 9-8336W	240VAC	XFORMER AC
M3	.125"	BRADY	HCPS 9-8336W	DW-00014A-0016-02	240VAC SELECT

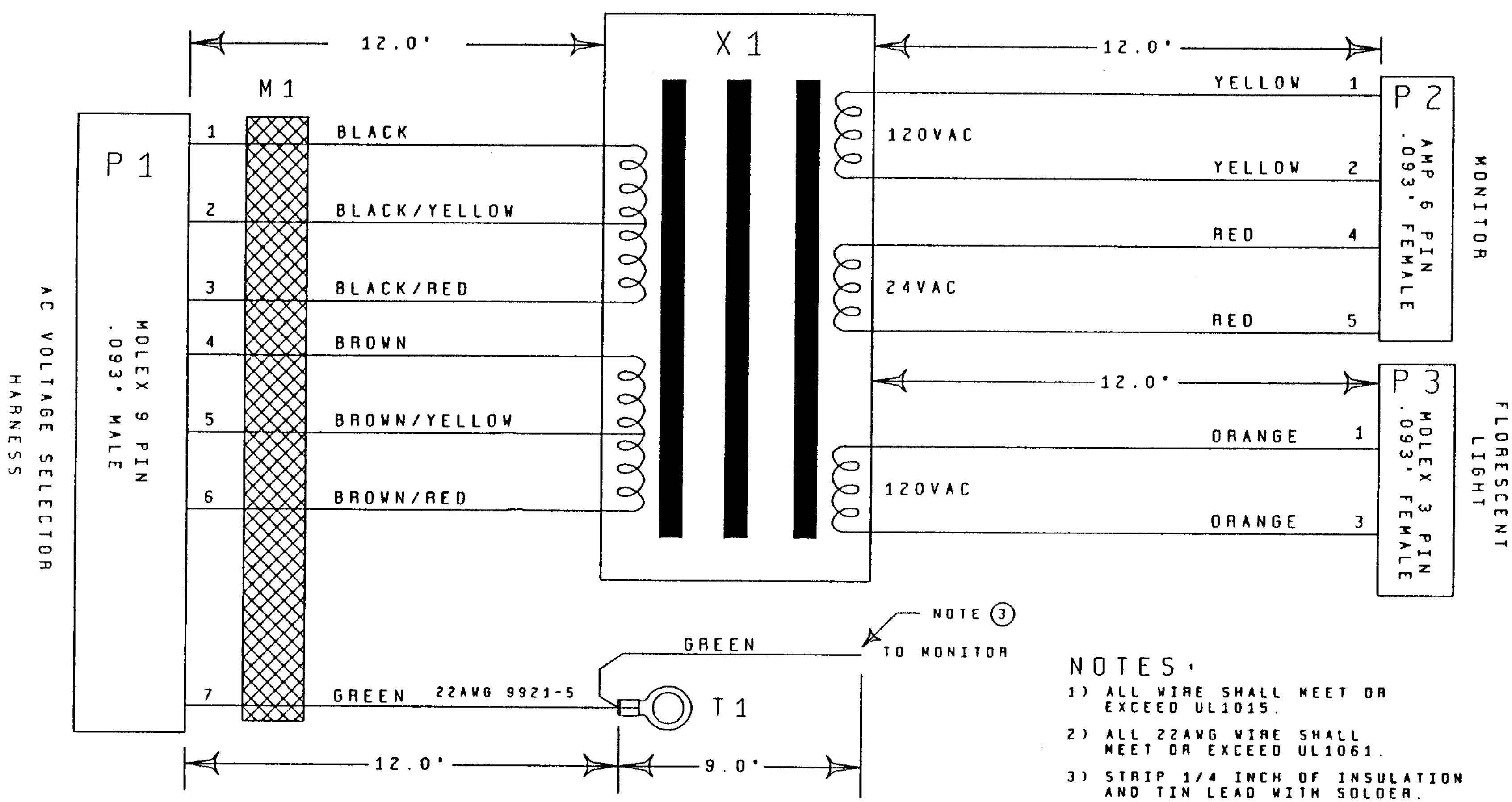
COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION

MICROPROSE Games
180 LAKEFRONT DR, HUNT VALLEY, MD 21030

NOTES: 1). ALL WIRE MUST MEET OR EXCEED OF UL1015

2). LABEL MARKERS: [crosshatched box]

DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES, 180 LAKEFRONT DR, HUNT VALLEY, MD 21030	
CHECKER: [signature]	DATE: 12-12-90	TITLE: 240 VAC VOLTAGE SELECTOR HARNESS	
ENGINEER: JAY G. McKIBBIN	DATE		
APPROVAL: [signature]	DATE: 12/19/96	SIZE: C	DRAWING NUMBER: DW-00014A-0018
APPROVAL	DATE	REV - 02	RELEASE ACWH4.1
		DATE 12-13-1990_14:12	SHEET 1 OF 1



NOTES:

1) ALL WIRE SHALL MEET OR EXCEED UL1015.
2) ALL 22AWG WIRE SHALL MEET OR EXCEED UL1061.
3) STRIP 1/4 INCH OF INSULATION AND TIN LEAD WITH SOLDER.
4) ATTACH T1 TO LOWER TRANSFORMER LAMINATE BOLT. USE A STAR LOCKWASHER TO MAINTAIN ELECTRICAL CONTACT.
5) MARKER M1 HAS TWO LINES OF TEXT.
6) ASSEMBLED TRANSFORMER IS MPG P/N A18-00003-007.

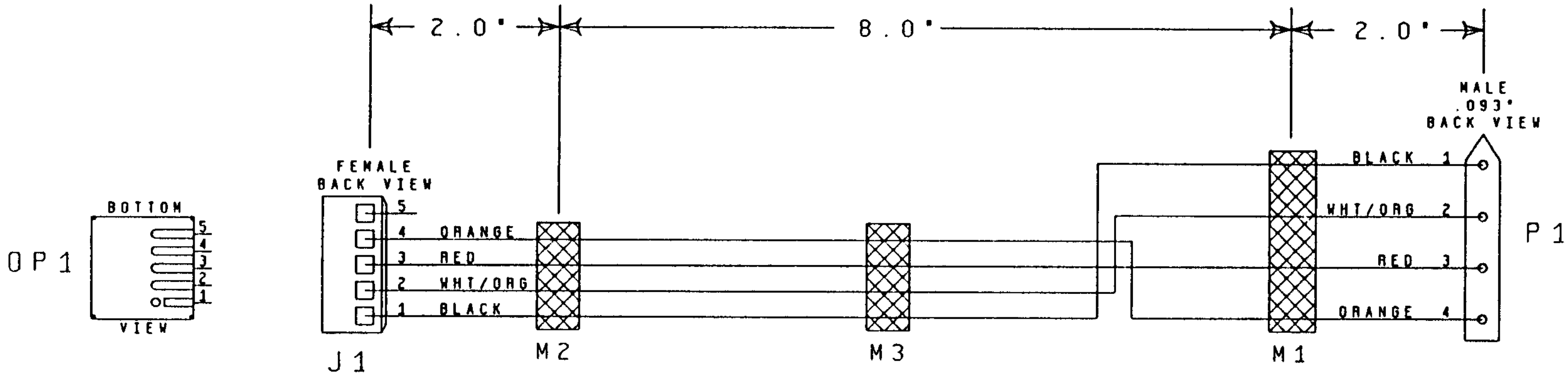
PARTS LIST

REF DES	MFG	PART NO	PIN NO
[illegible]1	MOLEX	03-09-2091	02-09-2116
[illegible]2	AMP	350715-1	350536-1
[illegible]3	MOLEX	03-09-1032	02-09-1117
[illegible]1	MIDWESTCO	#US3P218A	
[illegible]1	MOLEX	C-236-08X	

MARKER LIST

REF DES	MFG	PART NO	TEXT SIZE	TEXT
M1	BRADY	HCPS1.9-1008W	.125"	(LINE 1) TRANSFORMER ASSEMBLY (LINE 2) DW-00014C-0019-02

DRAFTER: DAVID J. BELLAMY	DATE:	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER:	DATE: 12-10-90	TITLE: TRANSFORMER ASSEMBLY	
ENGINEER: JAY G. McKIBBIN	DATE:		
APPROVAL:	DATE: 12/13/90	SIZE: C	DRAWING NUMBER: DW-00014A-0019
APPROVAL:	DATE:	REV -02	RELEASE XFORM.1
		DATE 12-11-1990_16:31	SHEET 1 OF 1



WIRE LIST (ALL WIRE IS 22 AWG)

SIGNAL	FROM	TO	COLOR	BELDEN PART NO
XJOY_GND	P1-01	J1-01	BLACK	9921-10
XJOY_CHA	P1-02	J1-02	ORANGE	9921-3
XJOY_+5V	P1-03	J1-03	RED	9921-2
XJOY_CHB	P1-04	J1-04	WHT/ORG	9921-20

PARTS LIST

REFDES	MFG	PART NO	PIN NO
P1	MOLEX	03-09-2042	02-09-2118
J1	BERG	65039-032	
J1	MOLEX		02-09-2116
J1	BERG	KEY PLUG	65307-001

MARKER LIST

REFDES	MFG	PART NO	TEXT SIZE	TEXT
M1	BRADY	HCPS.9-3758W	.125"	JOYSTICK
M2	BRADY	HCPS.9-3758W	.125"	XPOT
M3	BRADY	HCPS1.9-3758W	.125"	(LINE 1) X JOYSTICK CABLE (LINE 2) DW-00014C-0023-02

NOTES:

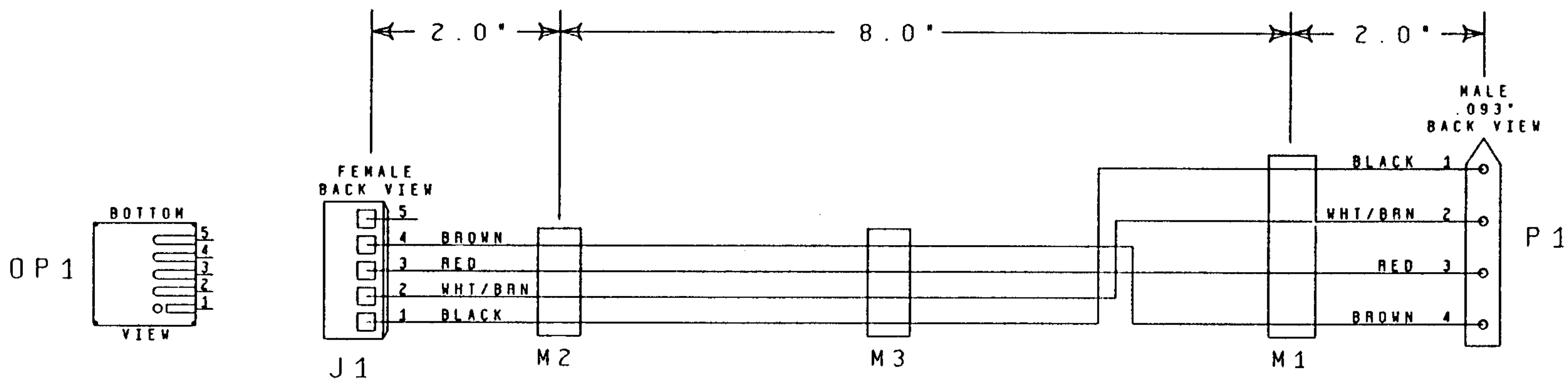
1) ALL 22 AWG WIRE SHALL MEET OR EXCEED UL1061.
2) TIE WRAP AT INTERVALS OF TWO INCHES.
3) MARKER M3 HAS TWO LINES OF TEXT.
4) WIRES ARE TWISTED BETWEEN MARKERS M1 AND M2.
5) INSTALL KEY PLUG IN PIN 5 OF J1.
6) CLIP PIN5 FROM OPTICAL ENCODER OP1.
7) OPTICAL ENCODER OP1 IS SHOWN FOR REFERENCE ONLY.
8) ASSEMBLED CABLE IS MPG P/N A18-00001-013.

DRAFTER: DAVID J. BELLAMY	DATE
CHECKER	DATE 12-12-90
ENGINEER: JAY G. McKIBBIN	DATE
APPROVAL	DATE 12/14/91
APPROVAL	DATE

MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

TITLE: X JOYSTICK CABLE

SIZE: C
DRAWING NUMBER: DW-00014C-0023
REV -02
RELEASE CABLE.11
DATE 12-13-1990_16:09
SHEET 1 OF 1



WIRE LIST (ALL WIRE IS 22 AWG)				
SIGNAL	FROM	TO	COLOR	BELDEN PART NO
YJOY_GND	P1-01	J1-01	BLACK	9921-10
YJOY_CHA	P1-02	J1-02	BROWN	9921-1
YJOY_+5V	P1-03	J1-03	RED	9921-2
YJOY_CHB	P1-04	J1-04	WHT/BRN	9921-19

PARTS LIST			
REFDES	MFG	PART NO	PIN NO
P1	MOLEX	03-09-2042	02-09-2118
J2	BERG	65039-032	
J1	MOLEX		02-09-2116
J1	BERG	KEY PLUG	65307-001

MARKER LIST				
REFDES	MFG	PART NO	TEXT SIZE	TEXT
M1	BRADY	HCPS.9-3758W	.125"	JOYSTICK
M2	BRADY	HCPS.9-3758W	.125"	YPOT
M3	BRADY	HCPS1.9-3758W	.125"	(LINE 1) Y JOYSTICK CABLE (LINE 2) DW-00014C-0024-02

NOTES:

1) ALL 22 AWG WIRE SHALL MEET OR EXCEED UL1061.
2) TIE WRAP AT INTERVALS OF TWO INCHES.
3) MARKER M3 HAS TWO LINES OF TEXT.
4) WIRES ARE TWISTED BETWEEN MARKERS M1 AND M2.
5) INSTALL KEY PLUG IN PIN 5 OF J1.
6) CLIP PIN5 FROM OPTICAL ENCODER OP1.
7) OPTICAL ENCODER OP1 SHOWN FOR REFERENCE ONLY.
8) ASSEMBLED CABLE IS MPG P/N A18-00001-012.

DRAFTER: DAVID J. BELLAMY
CHECKED: [signature] 12-12-90
ENGINEER: JAY G. McKIBBIN
APPROVAL: [signature] 12/14/90
APPROVAL:

MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

TITLE: Y JOYSTICK CABLE

SIZE: C | DRAWING NUMBER: DW-00014C-0024 | REV -02 | RELEASE CABLE.10
DATE 12-13-1990_16:02 | SHEET 1 OF 1

WIRE LIST

SIGNAL	FROM	COLOR	TO	COLOR
DGND	J1-01	BLACK	J2-3	BLACK
HSYNC	J1-02	YELLOW	J2-1	YELLOW
VSYNC	J1-03	WHT/BLK	J2-2	WHT/BLK
DGND	J1-04	BLK/WHT	J2-3	
AGND	J1-05	VIOLET	J2-7	
RED	J1-06	RED	J2-10	RED
GREEN	J1-07	GREEN	J2-9	GREEN
AGND	J1-08	ORANGE	J2-7	
AGND	J1-09	BROWN	J2-7	BROWN
BLUE	J1-10	BLUE	J2-8	BLUE

USE BELDEN CABLE, TRADE NO.9505

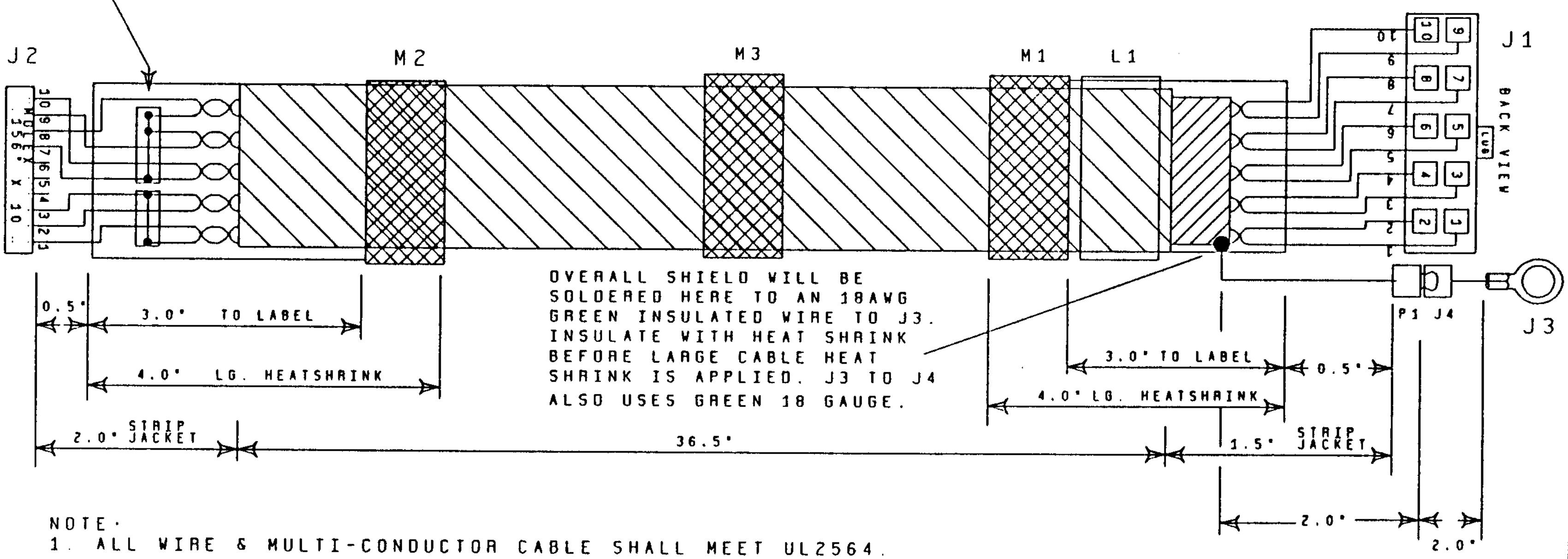
PART LISTS

REFDES	MFG.	PART NO.	PIN NO.
J1	DUPONT	65846-010	47389-000
J2	MOLEX	09-50-7101	08-55-0106
J3	MOLEX	C-236-08X	
J4	AMP	2-520183-2	
P1	AMP	2-520102-2	
L1	FAIR-RITE	2643802702	

MARKERS

REFDES	MFG.	PART NO.	TEXT SIZE	TEXT
M1	BRADY	LAT-4-619-10	.125"	VGB J1
M2	BRADY	LAT-4-619-10	.125"	W-6 MONITOR P200
M3	BRADY	LAT-6-619-10	.125"	(LINE 1) DISPLAY CABLE (LINE 2) DW-00014C-0025-02

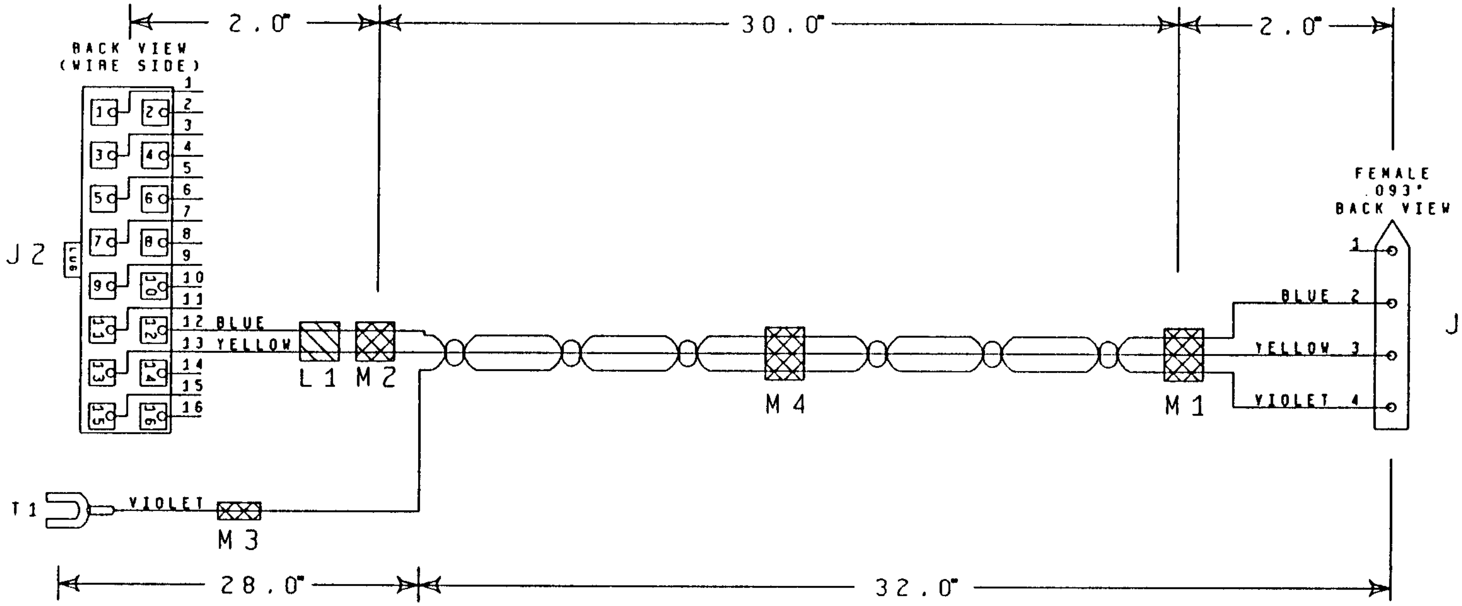
SOLDER BLACK WIRES FROM ASSOCIATED TWISTED PAIR AS INDICATED. COVER WITH HEAT SHRINK AS SHOWN BEFORE LARGE CABLE HEAT SHRINK IS APPLIED.



NOTE:

1. ALL WIRE & MULTI-CONDUCTOR CABLE SHALL MEET UL2564.
2. CABLE WILL LOOP AROUND AND THRU L1.
3. WIRES SOLDERED AND INSULSATED WITH HEAT SHRINK:
4. LABEL MARKERS:
5. CABLE JACKET:
6. OVERALL SHIELD:
7. ASSEMBLED CABLE IS MPG P/N A18-00003-010.

DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER: [signature]	DATE: 12-12-90	TITLE: DISPLAY CABLE MONCABLE	
ENGINEER: JAY G. McKIBBIN	DATE	SIZE: C	DRAWING NUMBER: DW-00014C-0025
APPROVAL: [signature]	DATE: 12/13/90	REV - 02	RELEASE
APPROVAL	DATE	DATE	SHEET 1 OF 1



WIRE LIST (ALL WIRE IS 22 AWG)				
SIGNAL	FROM	TO	COLOR	BELDEN PART NO
SH_YEL	J1-02	J2-12	DK BLUE	9921-13
SH_RED	J1-03	J2-13	YELLOW	9921-4
SH_12V	J1-04	T1	VIOLET	9921-7

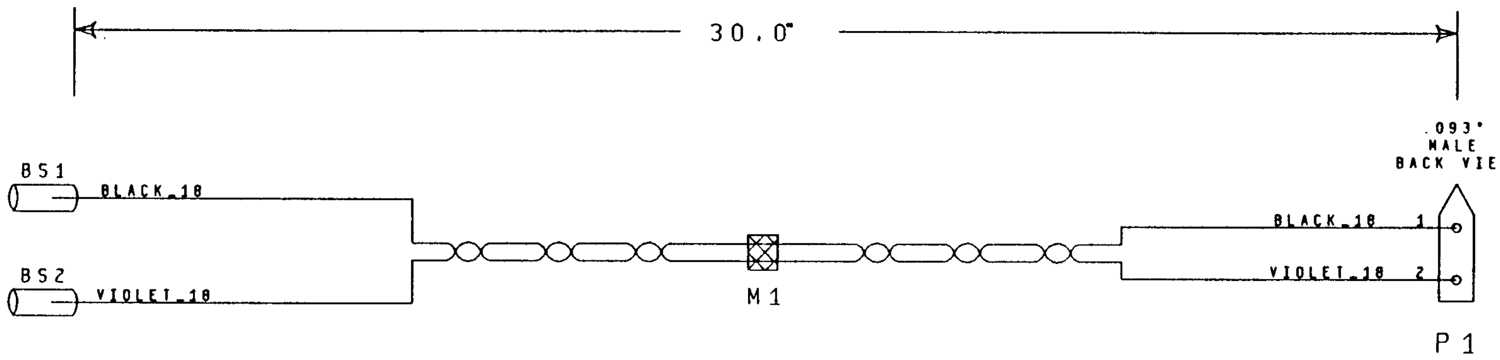
PARTS LIST			
REFDES	MFG	PART NO	PIN NO
J1	MOLEX	03-09-1042	02-09-5142
J2	MOLEX	14-57-1161	
L1	FAIR-RITE	2643164251	
T1	MOLEX	AA-234-08X	

MARKER LIST				
REFDES	MFG	PART NO	TEXT SIZE	TEXT
M1	BRADY	HCPS.9-3758W	.125"	HOST TO SHROUD
M2	BRADY	HCPS.9-3336W	.125"	HOST P4
M2	BRADY	HCPS.9-2508W	.125"	PWR SUP TB2-9
M4	BRADY	HCPS1.9-3758W	.125"	(LINE 1) LOWER SHROUD HARNESS (LINE 2) DW-00014C-0026-02

NOTES:

1) ALL 22 AWG WIRE SHALL MEET OR EXCEED UL1061.
2) TIE WRAP AT INTERVALS OF FOUR INCHES.
3) MARKER M4 HAS TWO LINES OF TEXT.
4) WIRES ARE TWISTED BETWEEN MARKERS M1 AND M2.
5) PINS 1, 2, 15 & 16 OF J2 MUST BE POPULATED.
6) SECURE L1 WITH ELECTRICAL TAPE.
7) ASSEMBLED HARNESS IS MPG P/N A18-00003-013.

DRAFTER: DAVID J. BELLAMY	DATE:	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER: [signature]	DATE: 12-17-90	TITLE: LOWER SHROUD HARNESS
ENGINEER: JAY G. McKIBBIN	DATE:	SIZE: C — DRAWING NUMBER: DW-00014C-0026
APPROVAL: [signature]	DATE: 12/18/90	REV -02 — RELEASE CABLE.12
APPROVAL:	DATE:	DATE 12-13-1990_16:33 — SHEET 1 OF 1



WIRE LIST (ALL WIRE IS 18 AWG)

IGNAL	FROM	TO	COLOR	BELDEN PART NO
ANGND	P1-01	BS1	BLACK	8918-10
AN12V	P1-02	BS2	VIOLET	8918-7

PARTS LIST

EFDES	MFG	PART NO	PIN NO
P1	MOLEX	03-06-2023	02-06-2101
BS1	T.B.D.		
BS2	T.B.D.		

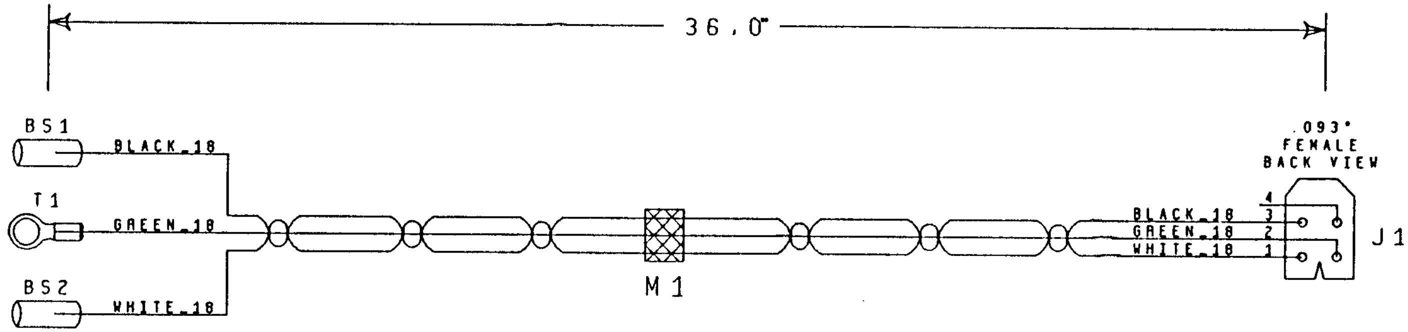
MARKER LIST

EFDES	MFG	PART NO	TEXT SIZE	TEXT
M1	BRADY	HCPS1.9-3758W	.125"	(LINE 1) FAN EXTEND HARNESS (LINE 2) DW-00014C-0027-02

NOTES:

1) ALL 18 AWG WIRE SHALL MEET OR EXCEED UL1015.
2) TIE WRAP AT INTERVALS OF FOUR INCHES.
3) MARKER M1 HAS TWO LINES OF TEXT.
4) WIRES ARE TWISTED.
5) CRIMP ONE END ONLY OF BUTT SPLICES BS1 & BS2.

DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER: [signature]	DATE: 12-12-90	TITLE
ENGINEER: JAY G. McKIBBIN	DATE	DC FAN EXTENSION CABLE
APPROVAL: [signature]	DATE: 12/13/90	SIZE: C — DRAWING NUMBER: DW-00014A-0027
APPROVAL	DATE	REV -02 — RELEASE CABLE.17
		DATE 12-12-1990.14:38 — SHEET 1 OF 1



WIRE LIST (ALL WIRE IS 18 AWG)				
SIGNAL	FROM	TO	COLOR	BELDEN PART NO
NEUTL	J1-01	BS2	WHITE	8918-10
CHASSIS	J1-02	T1	GREEN	8918-5
HOT	J1-03	BS1	BLACK	8918-9

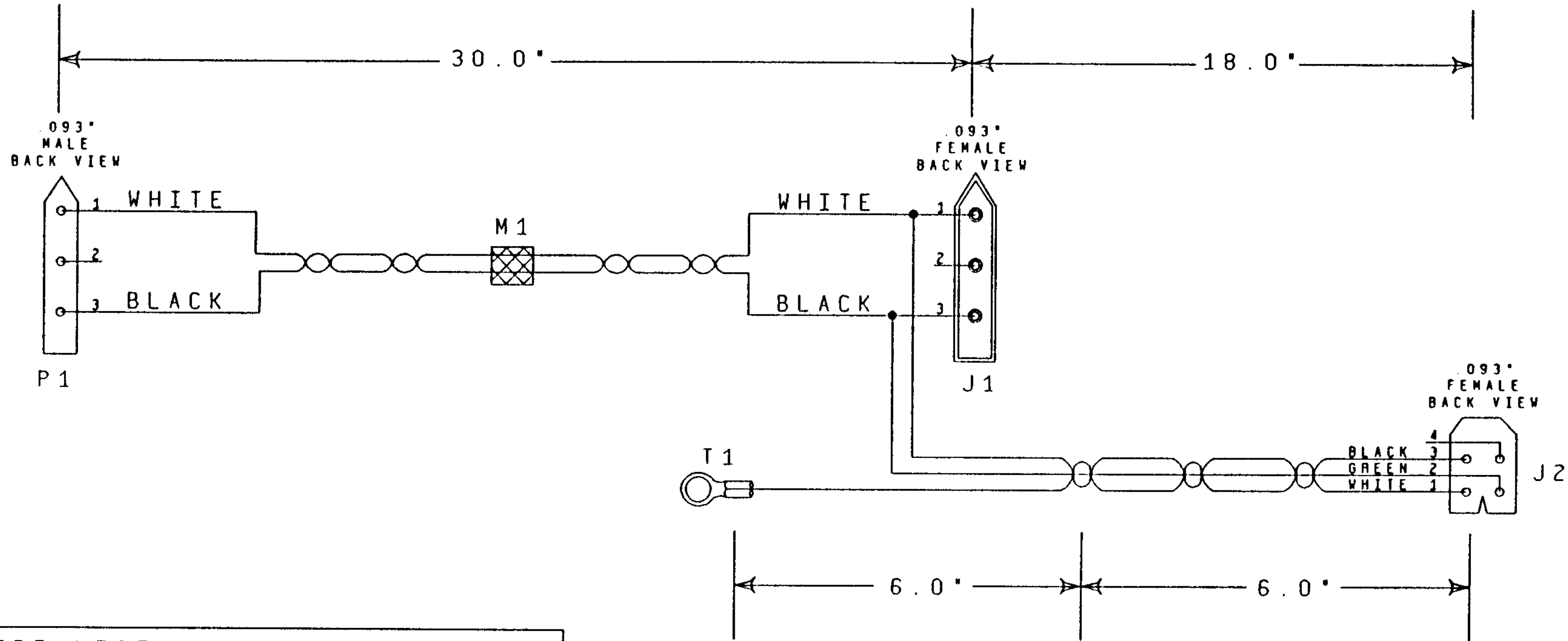
PARTS LIST			
REFDES	MFG	PART NO	PIN NO
P1	MOLEX	03-09-2049	02-09-2116
T1	MOLEX	C-236-08X	

MARKER LIST				
REFDES	MFG	PART NO	TEXT SIZE	TEXT
M1	BRADY	HCPS1.9-3758W	.125"	(LINE 1) AC-MARQUEE HARNESS (LINE 2) DW-00014C-0028-02

NOTES:

1) ALL 18 AWG WIRE SHALL MEET OR EXCEED UL1015.
2) TIE WRAP AT INTERVALS OF FOUR INCHES.
3) MARKER M1 HAS TWO LINES OF TEXT.
4) WIRES ARE TWISTED.
5) CRIMP ONLY ONE END OF BUTT SPLICES BS1 & BS2.
6) ASSEMBLED HARNESS IS MPG P/N A18-00003-014.

DRAFTER	DATE	
DAVID J. BELLAMY		MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER	DATE 12-12-90	TITLE
ENGINEER	DATE	AC - MARQUEE HARNESS
JAY G. McKIBBIN		
APPROVAL	DATE 12/14/90	SIZE C — DRAWING NUMBER DW-00014A-0028
APPROVAL	DATE	REV -02 — RELEASE CABLE.15
		DATE 12-13-1990_14:25 — SHEET 1 OF 1



WIRE LIST (ALL WIRE IS 18 AWG)				
SIGNAL	FROM	TO	COLOR	BELDEN PART NO
X2PANCOM	P1-01	J1-01	WHITE	8918-9
X2PANHOT	P1-03	J1-03	BLACK	8918-10
P2MARCOM	J1-01	J2-01	WHITE	8918-9
P2MARHOT	J1-03	J2-03	BLACK	8918-10
CHASSIS	J2-02	T1	GREEN	8918-5

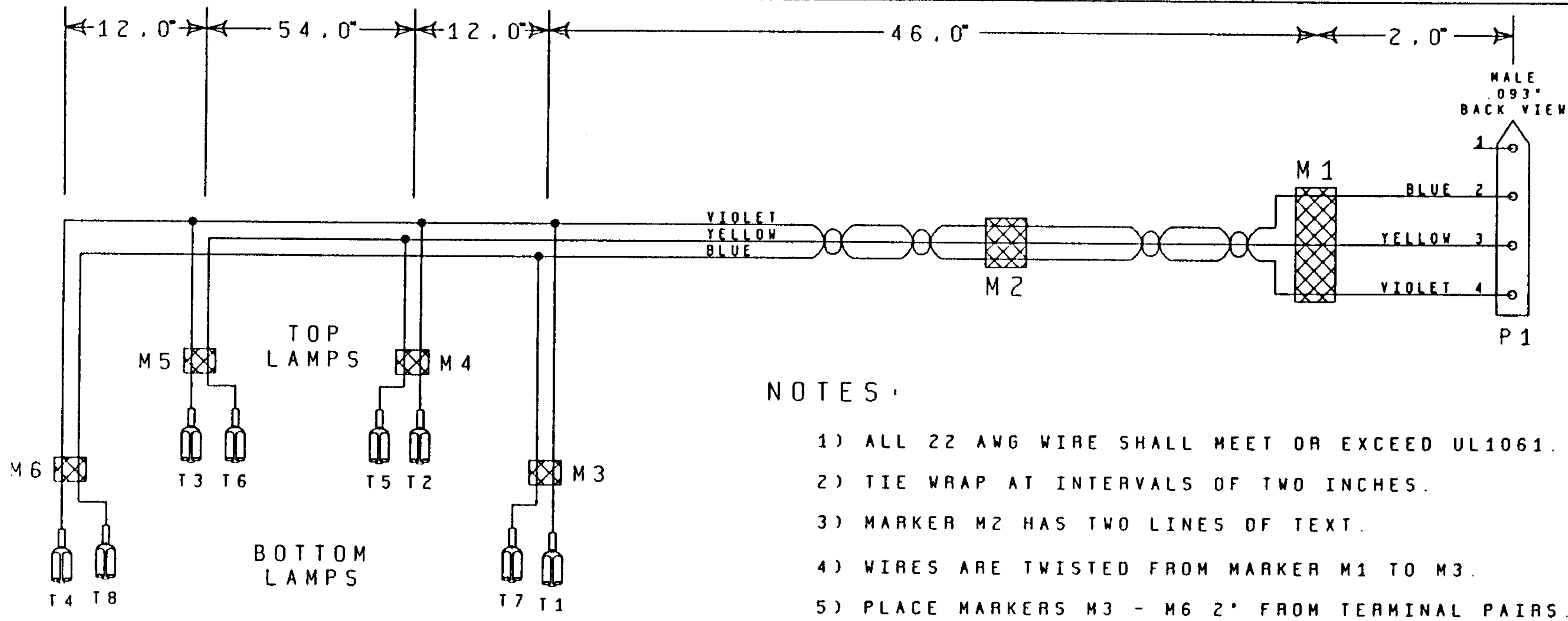
NOTES:

1) ALL 18 AWG WIRE SHALL MEET OR EXCEED UL1015.
2) TIE WRAP AT INTERVALS OF TWO INCHES.
3) MARKER M1 HAS TWO LINES OF TEXT.
4) ASSEMBLED HARNESS IS MPG P/N A18-00003-015.

PARTS LIST			
REFDES	MFG	PART NO	PIN NO
P1	MOLEX	03-09-2032	02-09-2116
J1	MOLEX	03-09-1032	02-09-1117
J2	MOLEX	03-09-1049	02-09-1117
T1	MOLEX	C-236-08X	RING TERM

MARKER LIST				
REFDES	MFG	PART NO	TEXT SIZE	TEXT
M1	BRADY	HCPS1.9-3758W	.125"	(LINE 1) FLUOR LITE Y CABLE (LINE 2) DW-00014C-0029-02

DRAFTER: DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER: [signature]	DATE: 12-12-90	TITLE: FLORESCENT LIGHT 'Y' CABLE	
ENGINEER: JAY G. McKIBBIN	DATE		
APPROVAL: [signature]	DATE: 12/13/90	SIZE: C	DRAWING NUMBER: DW-00014A-0029
APPROVAL: [signature]	DATE	REV -02	RELEASE
		DATE 12-12-1990_16:56	SHEET 1 OF 1



NOTES:

1) ALL 22 AWG WIRE SHALL MEET OR EXCEED UL1061.
2) TIE WRAP AT INTERVALS OF TWO INCHES.
3) MARKER M2 HAS TWO LINES OF TEXT.
4) WIRES ARE TWISTED FROM MARKER M1 TO M3.
5) PLACE MARKERS M3 - M6 2" FROM TERMINAL PAIRS.
6) TWO WIRES ARE CRIMPPED IN T1 - T5 & T7.
7) ASSEMBLED HARNESS IS MPG P/N A18-00003-016.

WIRE LIST (ALL WIRE IS 22 AWG)

SIGNAL	FROM	TO	COLOR	BELDEN PART NO
SH_RED	P1-02	T7	DK BLUE	9921-13
	T7	T8	DK BLUE	9921-13
SH_YEL	P1-03	T5	YELLOW	9921-4
	T5	T6	YELLOW	9921-4
SH_12V	P1-04	T1	VIOLET	9921-7
	T1	T2	VIOLET	9921-7
	T2	T3	VIOLET	9921-7
	T3	T4	VIOLET	9921-7

PARTS LIST

REFDES	MFG	PART NO	PIN NO
P1	MOLEX	03-09-2042	02-09-2118
1 - T8	AMP	2-520184-4	

MARKER LIST

REFDES	MFG	PART NO	TEXT SIZE	TEXT
M1	BRADY	HCPS.9-3758W	.125"	SHROUD LAMPS
M3	BRADY	HCPS.9-3758W	.125"	BOTTOM LAMP 1
M4	BRADY	HCPS.9-3758W	.125"	TOP LAMP 1
M5	BRADY	HCPS.9-3758W	.125"	TOP LAMP 2
M6	BRADY	HCPS.9-3758W	.125"	BOTTOM LAMP 2
M2	BRADY	HCPS1.9-3758W	.125"	(LINE 1) UPPER SHROUD HARNESS (LINE 2) DW-00014C-0030-02

DRAFTER DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER [signature]	DATE 12-10-90	TITLE UPPER SHROUD HARNESS	
ENGINEER JAY G. McKIBBIN	DATE		
APPROVAL [signature]	DATE 12/13/90	SIZE C	DRAWING NUMBER DW-00014C-0030
APPROVAL	DATE	REV -02	RELEASE CABLE.18
		DATE 12-11-1990_18:36	SHEET 1 OF 1